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SUGAR BEET

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SPRECKELS SUGAR BEET BULLETIN

Austin A. Armer	*Editor*	WOODLAND	*MOhawk 2-3261*

SPRECKELS SUGAR BEET BULLETIN

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$1.50 PER 100 FEET

is the value of an average California sugar beet row.

FARM THE WHOLE FIELD

and avoid gaps in the row. They add up to substantial losses.

(See page 2)

Vol. 21 **JANUARY-FEBRUARY, 1957** **No. 1**

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

FARM THE WHOLE FIELD

By AUSTIN ARMER

Agricultural Engineer, Spreckels Sugar Company

THIS TITLE is a sober admonition based on the observable fact that a great many fields planted to sugar beets contain alarming proportion of non-yielding areas. I do not refer to headlands, roadways, ditches or fence lines. I refer to the actual planted area where, because of carelessness or lack of skill on the part of the field labor, there may be many consecutive feet of sugar beet row which are blank—yielding no sugar beets, but usually what is worse, a heavy crop of weeds.

MAN MADE BLIGHT

Only a few of us are old enough to remember the days of sugar beet blight in the twenties, when hundreds of feet of sugar beet row would succumb to the Curly Top disease and would leave yard after yard of unoccupied row. But we do not have to have a long memory to recall having seen many consecutive yards of blank row in present day beet fields—long after "sugar beet blight" from natural causes has become a thing of the past. This type of blight I choose to call man made blight.

Just as natural diseases and pests have many varieties and strains, so also, does man made blight.

PLANTER BLIGHT

The first cultural operation in growing a crop of sugar beets which may lead to blank areas in the row is failure of one or more units of the planter to deposit seed. I do not necessarily refer to such careless operation as permitting one or more hoppers on the planter to run out of seed. Rather, I refer to the very frequent possibility that a clod, stick, or alfalfa root may lodge under a planter opener, unnoticed by the operator, and tear out a good many yards or hundreds of yards of row before it is noticed. The insidious thing about this is that it may never be noticed. Sometimes the press wheel covers up the damage so that no one guesses that no seed has been deposited until after germination has occurred and the blank row becomes immediately evident.

THINNER BLIGHT

No method of thinning is entirely blameless for this kind of man made blight. Thinning machines may be blamed for taking out long areas of row and leaving spotty stands. But the machine is blameless. After all the machine was operated by a man whose business it was to watch the pre-thinning stand and adjust the machine so that it would not take out too many beets.

Hand thinning crews may be just as damaging to a stand as carelessly operated thinning machines. This damage occurs not so much as a result of taking out too many beets, but rather of leaving too many clumps, each of which contains so many seedlings that the result is not a single marketable beet.

CULTIVATOR BLIGHT

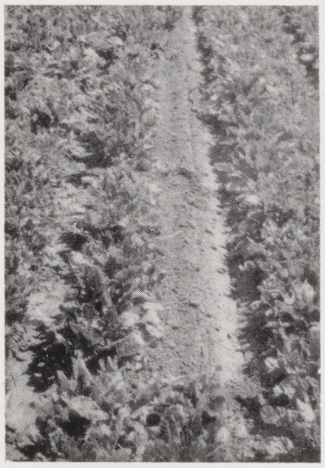
This is rather an old expression among row crop farmers, because a carelessly steered cultivating tractor is such a common cause for the destruction of long stretches of row.

It should not be necessary to warn about driving a cultivator tractor on guess rows by mistake, but this is, nevertheless, one of the commonest causes of cultivator blight. The tractor driver steers with the greatest skill and concentration, exactly centering the row between cultivator sweeps—that is the row he is watching—in the meantime, guess rows are totally destroyed.

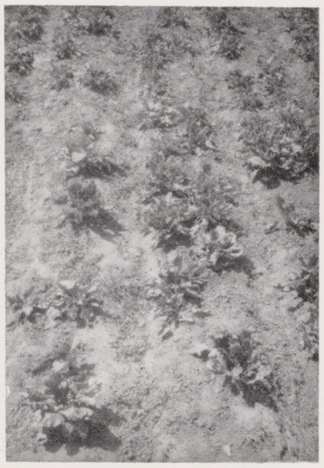
Of course, guess rows are not the only source of cultivator blight. The same foreign obstacles—like sticks, clods, and alfalfa roots—which cause trouble with planters can cause trouble at cultivating time.

FERTILIZER BLIGHT

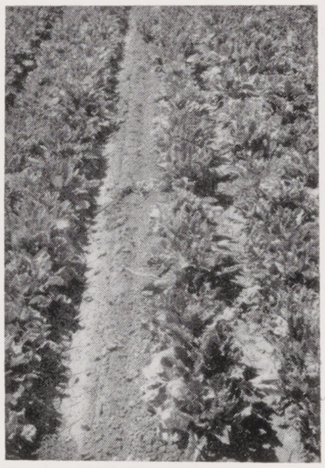
This is a sort of man made blight which merits rather serious attention, especially since liquid fer-



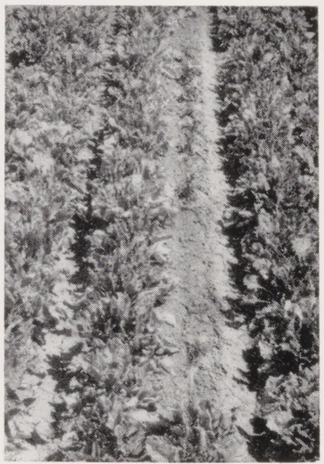
PLANTER BLIGHT



THINNER BLIGHT



CULTIVATOR BLIGHT



FERTILIZER BLIGHT

2

tilizers have become so popular.

If there is the slightest leak in any of the pipe or hose connections leading to the applicator shoes, a few drops of liquid fertilizer will dribble onto the growing plants, and they are a mighty effective contact herbicide. The same is true in the case of dry ammonia gas, except that it is all the more insidious because the gas is not visible, and because it destroys the crop over a wider area.

WHY BE CONCERNED?

This question has an easy answer. Every hundred feet of row (on a 30″ row spacing) was worth exactly $1.50 to the average California beet grower last year—and the value is increasing as the price of sugar rises.

In view of the fact that there are (for 30″ rows) 17,396 feet of row in every acre, it takes a mighty small percentage of the row in one acre to add up a hundred feet, or a dollar and a half's worth.

Consider too, what a dollar and a half will buy. It will pay for driving a wheel type tractor over an entire acre, whether the operation be planting, cultivating or mechanical thinning.

Consider again that a few ten foot skips here and there rapidly multiply—ten of them make a hundred feet; again—a loss of a dollar and a half. Finally in the overall view, a hundred feet of lost row in every acre amounts to almost six percent of the total area of the field. From this it may be seen how easy it is to lose dollars by losing a few very small fragments of the total row length in a field.

Perhaps if every field operator engaged in driving a tractor—regardless of the operation—is made to understand that every hundred feet of row is worth at least a dollar and a half, he may acquire a better appreciation of the need for accurate driving and close attention to the performance of each one of his tools—whether it be planter, thinner, fertilizer rig or cultivator.

THE 1957 SUGAR BEET CROP OUTLOOK

By GUY D. MANUEL, *Vice President and General Agriculturist, Spreckels Sugar Company*

BECAUSE OF THE RAPID pace of the recent changes in national sugar consumption estimates and proportionate share acreages, some appraisal of the current position of the California beet sugar industry seems to be in order.

With the passage of the amendments to the Sugar Act during 1956, the beet sugar industry, for the first time in a number of years, could look forward to expansion as the nation's use of sugar increases. It was believed that the new legislation would permit a slow but constant rate of growth and the industry was anticipating the marketing of nearly 1,850,000 tons of beet sugar during 1956. Instead, the marketings for the year approximated 1,955,000 tons!

A part of this increase in sales can be possibly accounted for by the users of sugar improving their inventories from the unusually low supplies on hand at the end of 1955. Another part can probably be attributed to the general international unrest and apprehension. In any event, a great deal more sugar was purchased in 1956 than was expected and the consumption estimate for 1957 has already been re-estimated at 9,000,000 tons—200,000 tons more than the initial 1957 estimate of national consumption. Consumption of 9,000,000 tons of sugar means that the beet sugar industry can market 1,954,000 tons during 1957 even if no further increases in the estimate are forthcoming.

These changes in the marketing situation have of necessity brought about almost simultaneous changes in the proportionate share program. Initial shares to California growers were derived from a national base of 885,000 acres and resulted in a total of 192,341 acres for the state. On January 2 the government increased the national total to 932,000 acres, which in turn resulted in a California allocation of 202,127 acres. This 10,000 acre increase has already gone out to the beet growers through the state and county ASC offices. Just in the last few days and in the light of domestic and world sugar supplies, the national beet acreage goal was further expanded to 950,000 acres to insure adequate supplies of beet sugar for the anticipated demand in 1957 and 1958. While final figures are not yet released as this article goes to press, California's new acreage might be estimated at about 206,000 acres.

Digressing from the 1957 beet acreage for a moment, it is interesting to note that in the past few weeks world sugar prices have been above domestic U. S. prices for the first time since the outbreak of the Korean War. Rapid fluctuation of the world price again emphasizes the importance of the Sugar Act and the value of a domestic industry to the U. S. consumer.

The 206,000 acres estimated as the final allocation for California is a large increase over the 182,500 acre allotment in 1956; however, there have been larger acreages and unless 1957 is a year of record production, the tonnage resulting from this acreage will probably be less than that produced from 202,000 acres in 1954. With a substantial portion of the 1957 acreage already planted, an early start at harvest appears certain. And it is impossible to over-emphasize the importance of early harvest under conditions of large acreages. In 1956, for example, the third Spreckels factory was not started until September 15, about 30 days later than normal.

Plans for the processing of the 1957 crop are already well under way. Minor changes and capital improvements at two of the factories should add to an already increased slicing rate. Transport trucking will be extended and expanded wherever possible to help improve rail service by reducing car requirements at many receiving stations.

In short, the outlook for the 1957 harvest and the 1957 price for sugar is excellent. Under these conditions there is no hesitation in recommending that growers avail themselves of this opportunity to expand their sugar beet production.

IMPROVED SUGAR BEET STRAINS ACHIEVED BY SPRECKELS RESEARCH

By LAUREN BURTCH
Agronomist, Spreckels Sugar Company

THE ULTIMATE AIM of a research department in a commercial organization is to bring into general use the products from its research program. Since 1945, the Spreckels Sugar Company has maintained a plant breeding program aimed at the production of improved varieties of sugar beets for each of the localities in which it contracts beets. The groundwork for the Spreckels breeding program was actually laid by the earlier contributions of U. S. D. A. and sugar company plant breeders through the Curly Top Resistance Breeding Committee. This early cooperative organization made possible the development of a domestic seed industry and provided the initial curly top resistant varieties which preceded some of our present day commercial varieties. These original varieties have since been improved in such characteristics as bolting, disease resistance, cold germination and yield, thus making them better adapted to the various local disease and climatic conditions under which Spreckels beets are contracted. The U.S.D.A. is continuing its work on variety improvement aimed toward meeting a wide variety of conditions. A recent U.S.D.A. variety, U.S. 75 for example, possesses sufficient curly top, mildew and bolting resistance to permit its use throughout most of California.

The first Spreckels variety, S-2, was released for commercial use in 1952. Since its release, four additional varieties have been added. All of these varieties have been developed to fit specific areas in California. For example, S-1, S-3, and S-4 combine sufficient bolting resistance to permit them to safely overwinter without producing an excessive number of seed stalks before harvest in the spring. Varieties S-2 and S-3 possess the high degree of curly top resistance necessary for use in the San Joaquin Valley. Varieties S-1 and S-2 possess sufficient mildew resistance to permit use in the coastal area. The last variety, S-5, combines good yielding qualities with some degree of leaf spot resistance. This variety was originally intended for use in the area north of Woodland where Cercospora Leaf Spot can be a problem.

All new varieties are tested thoroughly over a period of years in cooperating growers' fields before they are accepted for commercial use. These variety tests are strict examinations which each new strain must pass with regard to disease, tonnage, sugar percentage and other factors which could interfere with their future performance in the field. Spreckels growers, by cooperating in this testing work, play a very important role in the development and screening of new varieties.

Table I compares two years of variety test performances in the San Joaquin Valley of Spreckels S-2 and S-3 with a check variety, U.S. 75. The figures in Table I are averages of all tests in which the varieties listed appeared together. Each individual test was replicated 6 to 8 times, and contained from 6 to 18 additional experimental strains.

TABLE I.

VARIETY TEST COMPARISONS
SAN JOAQUIN VALLEY, 1955-1956

Variety	No. Tests	Tons Beets/Ac.	% Sugar	Pounds Sugar/Ac.	% Increase Sugar/Ac.
S-2	15	28.81	14.30	8270	6.7%
US 75		26.66	14.45	7720	
S-3	7	31.49	14.37	9170	6.7%
US 75		29.21	14.60	8590	

TABLE II.

VARIETY TEST COMPARISONS
SACRAMENTO-NORTHERN SAN JOAQUIN VALLEYS, 1955-1956

Variety	No. Tests	Tons Beets/Ac.	% Sugar	Pounds Sugar/Ac.	% Increase Sugar/Ac.
S-2	15	25.53	14.35	7330	8.6%
US 56		22.62	14.89	6750	
S-1	9	24.90	15.05	7520	9.7%
US 56		22.86	14.89	6860	
S-4	11	25.25	14.87	7538	9.0%
US 56		22.36	15.43	6914	
S-5	7	26.67	14.57	7800	14.9%
US 56		22.76	14.69	6790	

A similar comparison for the Sacramento and Northern San Joaquin Valleys appears in Table II. This table compares yields from four Spreckels varieties commercially available in these areas with U.S. 56 as a check.

It is apparent from both tables that, while all varieties listed yield well, the Spreckels variety in each case yields from 6 to 15 percent more sugar per acre than the check variety. A closer look at the tables will show that the increase in sugar per acre results from increased tonnage. This tonnage increase is accompanied by a slight decrease in sugar percentage. This slight reduction in sugar percentage does not mean that variety differences are responsible for low sugar percentages in the field. The extreme low sugar percentages sometimes produced in the field are undesirable to grower and processor alike, but they are largely the **result of cultural and climatic conditions rather than variety differences.** Thus far all available "sugar type" varieties are so lacking in tonnage that they result in a reduction in sugar per acre and Spreckels Sugar Company feels the variety that will produce the most sugar per acre for the grower is still the most desirable variety to plant.

There is an answer to the problem of increasing sugar per acre yields without reducing sugar percentages, however. That is by the production of hybrid varieties of sugar beets.

HYBRID VARIETIES

Experimental results indicate that hybrid varieties can be produced which will yield substantially more sugar per acre than present commercial varieties. A number of test hybrids show improvements in both tonnage and sugar percentage. Whereas open pollinated or standard varieties seldom, if ever, show improvements in both tonnage and sugar percentage. Therefore, because of the potential value of high yielding hybrids, most sugar beet plant breeders are placing major emphasis on the production and testing of hybrid varieties.

There are problems involved in the commercial production of hybrids both in seed production and disease resistance qualities, but it appears safe to predict that the next major transition in sugar beet varieties will be away from the standard type varieties presented in Tables I and II, and toward hybrids. Most of the problems of seed production of hybrids have been well worked out. It now remains to select those strains which, when crossed together, produce the best hybrids; then increase these foundation strains for commercial use.

The method of determining the best strains is to make numerous test crosses and to compare the performance of these test crosses in variety tests. It should be stressed that not all hybrids are good. On the contrary, hybrid varieties usually range from very good to poor in comparison with standard commercial varieties. The data in Chart I illustrates the range that is often encountered in yields from hybrid variety tests. This test was located in the Linden area east of Stockton and compared 20 varieties. Of the 20 varieties, 6 were superior in yield to the best commercial check, but 5 were inferior to the poorest commercial check. The remaining varieties were grouped between the checks. This illustrates the variability usually found in hybrid combining ability tests, and illustrates why it is necessary to make and test many hybrids so that only the best will be retained. Chart I plots the performance of selected hybrids from the Linden test compared with 2 commercial checks. These hybrids were selected to show the variability encountered. The best two hybrids, D and C, were both high tonnage varieties, but C had a lower sugar percentage than the commercial checks while D was better than the top check variety in sugar percentage. The next hybrid, B, yielded just as well as S-2 and slightly better than U.S. 56. Hybrid A was inferior to all other varieties in tonnage and therefore in pounds of sugar per acre, although it was very good in sugar percentage.

One hybrid variety test in 1956 located in Kern County near Arvin was unique in that of 16 varieties in the test, all the hybrids (13) out-yielded the best commercial check. The performance of four of these hybrids with commercial checks, S-2 and U.S. 75, are shown in Chart II. Once again the top variety in the test, hybrid H, combined excellent tonnage with above-average sugar percent, producing a high sugar-per-acre yield. Hybrid G was also high yielding in both tonnage and sugar percentage, but it was not quite as high in sugar per acre as hybrid H. Hybrid F produced as high a tonnage as hybrid H, but was low in sugar percentage. Hybrid E had the best sugar percentage of all varieties but low tonnage and consequently low sugar per acre.

The two bar charts illustrate the potentialities and variations which are encountered in hybrid varieties. There is, however, one additional point to be gained by comparing Chart I with Chart II. The average of all varieties in Chart I was 26 tons per acre with 17.5 percent sugar. The average of all varieties in Chart II was 36 tons per acre with 13.3

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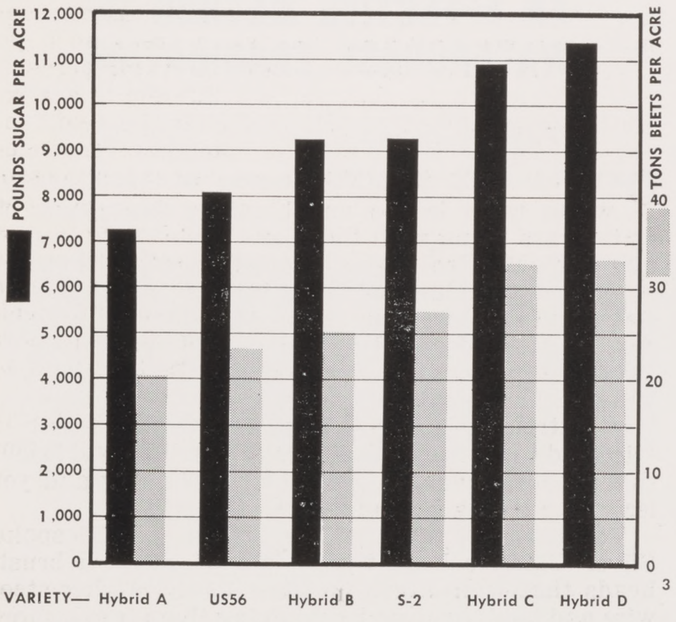

CHART I—Hybrid varieties are not necessarily high in either tonnage or sugar percentage. But properly selected hybrids may yield high sugar per acre, yet with high sugar percentage, a characteristic not available in open polinated varieties.

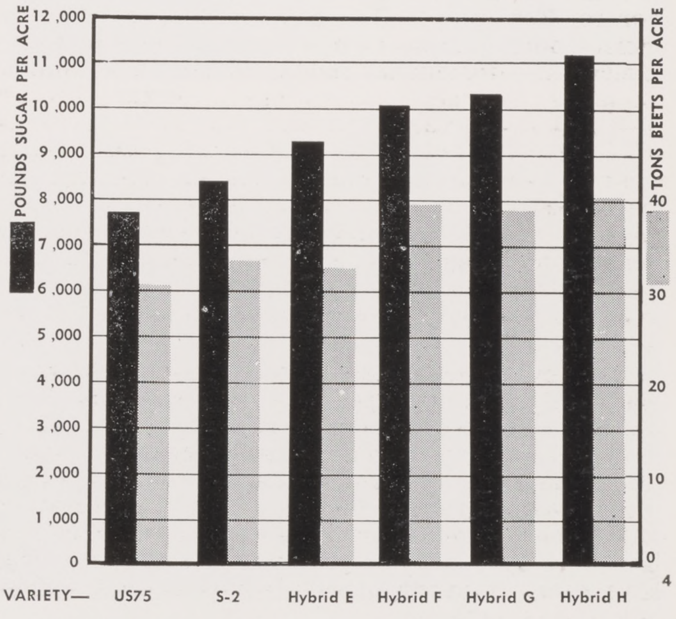

CHART II—The progressing improvement in sugar per acre displayed by hybrid varieties demonstrates that the hybrid breeding technique offers the possibility of striking yield increases compared to open-polinated varieties.

WATERGRASS – WORST WEED

By HARRY J. VENNING, JR.
District Manager, Spreckels Sugar Company

IN SUPPORT of this title, I quote from a recent conversation with Bill Harvey, Extension Specialist in Weeds, University of California at Davis. Bill has just received the answers from a questionnaire he has sent to all County Farm Advisors in California asking them to list the three most serious weeds in the order of economic importance.

"All the answers aren't in yet—we have received answers from about three-fourths of the counties in California," said Bill.

"So far every county has included watergrass among the worst three weeds, and most of them put watergrass at the head of the list."

The Agricultural Extension Service is not the only agency aware of the seriousness of watergrass in sugar beets. We of Spreckels Sugar Company have recognized the seriousness of the problem for many years and have investigated all existing means for control, and through the pages of the Sugar Beet Bulletin have passed this information along to our growers.

But the job is by no means finished. The cost of complete control has been in many cases so great that growers prefer to take their chances with either the reduction in yield or complete loss of the beet crop.

Believing that an expensive cure may be no cure at all, Spreckels Sugar Company's Agricultural Department has planned an intensive campaign against watergrass. The campaign will attack the problem from several angles—including research and development on mechanical and chemical methods of control (see John McDougall's article on mechanical control in this issue of the Bulletin), and will also include the maximum cooperation with all public agencies interested in the problem. The Agricultural Extension Service of the University is, of course, closest to the problem and are in an outstanding position to lick it. Both Bill Harvey, Extension Weed Control Specialist and Jack Hills, Extension Specialist in Sugar Beets, have the problem high on their agenda for 1957.

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WATERGRASS CAN BE CONTROLLED. The experimental plot on the right was completely freed of watergrass by shielded chemical spray back in 1949. Present research is aimed at doing the job at low cost and without damage to the crop.

Again quoting Bill Harvey—"The manufacturers of chemicals for weed control now offer us more possibilities for watergrass eradication than ever before. We should have some pretty definite answers soon, because we already have chemicals capable of excellent control on watergrass although not completely without damage to the crop plants.

"Chemical methods hold a great deal of promise at this time not only because the past performance points to a reasonable degree of success accompanied by a small calculated risk, but also because there is evidence that certain products in the test tube stage will be so selective in their destruction of watergrass that they may have no measurable effect on the crop."

The Spreckels program for 1957 has been initiated with an appropriation of funds to cover time, materials and equipment to be devoted entirely to the study of watergrass control. A portable spray rig capable of applying all types of chemicals for watergrass control will be built and made available for widespread trials.

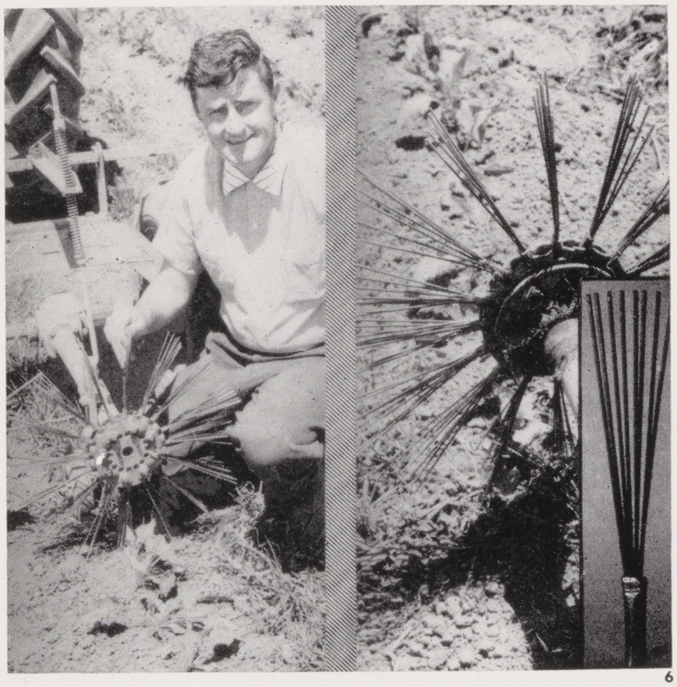
Watergrass is here to stay, for the sources of seeds (rice fields, irrigation ditches, etc.) cannot be eradicated. Therefore Spreckels Sugar Company accepts the obligation of determining the most effective and economic methods of control, and of passing this information along to its growers.

AN EFFECTIVE METHOD OF WATERGRASS ERADICATION

By JOHN McDOUGALL
Field Superintendent, Spreckels Sugar Co.

DURING THE SPRING season of 1956, heavy, warm rains led to an abundant emergence of watergrass along with the sugar beets. This caused many growers to make the decision to disk up a good emerged stand of beets because of the heavy watergrass infestations. Soon after these rains, the soil moisture dropped and the watergrass did not have the opportunity to stool out. It was literally hanging by a single thread-like root. It would have been extremely costly to hand thin such a stand so I decided to attempt the development of a steel brush that would sweep the grass out of the row and yet leave the young beets unharmed.

To do this, I replaced the knives of a 16 spoke Silver Thinner head with a set of 16 steel brush heads that were made up from 11 Ga. spring steel wire and held together by crimping them into a short section of ¼″ pipe. These 16 brushes were then clamped into the thinner head and mounted on the standard silver thinner unit.



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THE AUTHOR, with his wire brush attachment to a Silver Thinner.

DETAIL of the brush wheel, and (inset) one of the 16 brushes.

This "sweeper" did an excellent job of watergrass eradication, and thinning costs were cut down to a single long-handled hoeing job.

There may be similar cases in the future—where watergrass emerges with the beets, yet where the moisture level is just low enough to limit the watergrass root development to a single delicate thread. Under this condition, beets are not apt to suffer, and an opportunity is presented for quick and easy eradication of the watergrass.

The mechanism is simple and easy to make. It fits regularly available Silver Thinner heads, and permits watergrass control at a cost which is less than a single cultivation.

DAVIS CAMPUS IS HOST TO MANY AGRICULTURAL GROUPS

CALIFORNIA'S LARGEST concentration of agricultural scientists and specialists is found in the teaching, research and Extension staff on the Davis Campus, University of California. Little wonder, therefore, that Davis is chosen as the meeting place for so many organizations affiliated with agriculture.

THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS held the 35th annual meeting of its Pacific Coast Section at Davis on December 27-28, 1956. Elected to chairmanship of the Section for 1957 was Spreckels Agricultural Engineer, Austin Armer.

THE AGRICULTURAL ENGINEERING CONFERENCE was held on January 24-25. Papers were presented by workers affiliated with the University, with

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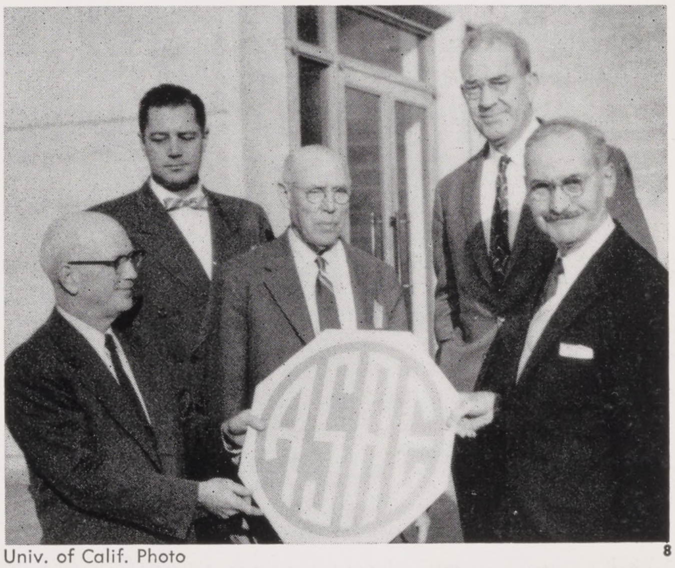

Univ. of Calif. Photo

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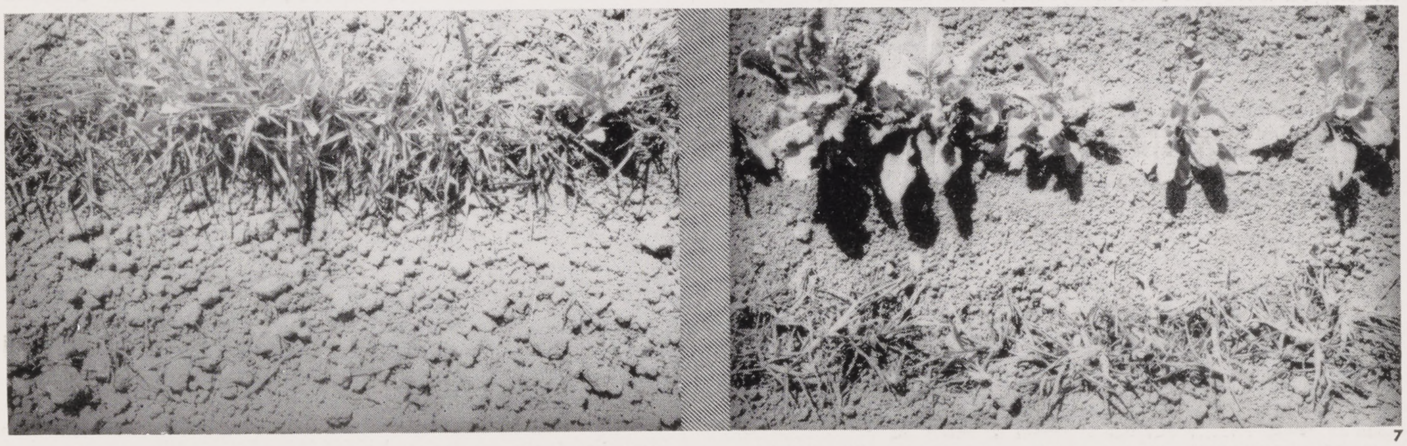
NEW CHAIRMAN of Pacific Coast Section, American Society of Agricultural Engineers is Austin Armer (right), who receives Society plaque from retiring chairman M. E. Hamilton. (Left) Back Row—Lloyd H. Lamouria, Vice Chairman; Walter W. Weir, Secretary, and Prof. Roy Bainer, National President of the Society.



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LEFT — a detail of the watergrass-infested sugar beet row.

RIGHT — The sugar beet row after the wire brush wheel passed over.

AGRICULTURAL GROUPS

(Continued from Page 7)

the USDA and with industry. Section headings were Farm Machinery, Farm Safety, Farm Structures and Rural Electrification.

CALIFORNIA BEET SUGAR TECHNOLOGISTS CONFERENCE was held on February 8th, 1957. Attending this conference were the specialists from Beet Sugar Processors and from State and Federal experiment stations. Titles of subjects presented were:

Green Manuring as a Soil Management Practice for Increased Sugar Beet Production—W. A. Williams, U. C., Davis.

Weed Control Panel—W. A. Harvey, U. C., Davis; R. L. Loomis, U. C., Davis and Don Fife, Holly Sugar Corp.

Virus Diseases of Sugar Beets in California—C. W. Bennett, USDA, Salinas.

Current Activities on Beet Leafhopper Control for the Protection of 1957 Crops—Harold Green, California State Department of Agriculture.

Pros and Cons of Mechanical Thinning—H. W. Kittredge, Holly Sugar Corp.

Systemic Seed Treatment—R. A. Flock, U. C., Riverside.

Nematode Control—D. J. Raski, U. C., Davis.

Sugar Beet Breeding for Nematode Resistance—Charles Price, USDA, Salinas.

Saving Sugar Beet Tops—Austin A. Armer, Spreckels Sugar Co.

Pros and Cons of Petiole Analysis—R. C. Pearl, U. C., Davis.

Delivery of Clean Beets (a film)—Austin A. Armer, Spreckels Sugar Co.

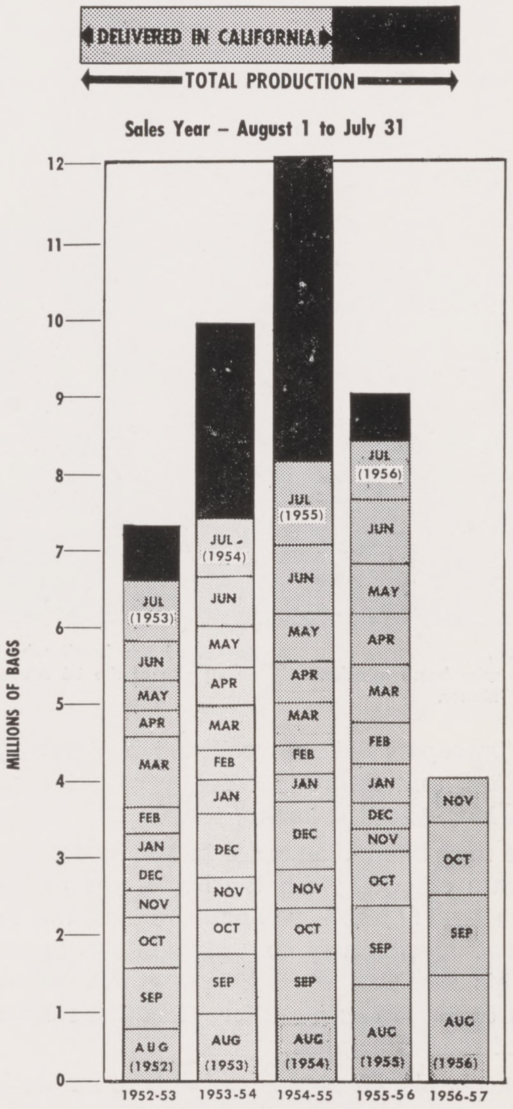
IMPROVED SUGAR BEET STRAINS

(Continued from Page 5)

percent sugar. Both were excellent tests and both averaged nearly the same sugar per acre (over 9,000 pounds for each). The immediate conclusion might be that Chart I contained "sugar type" varieties and hybrids and Chart II "tonnage type." This was not the case, for S-2 was present in both tests and it averaged 16.9 percent sugar in test 1 and only 12.7 percent sugar in test 2—illustrating that high sugar is governed far more by environmental conditions than by variety.

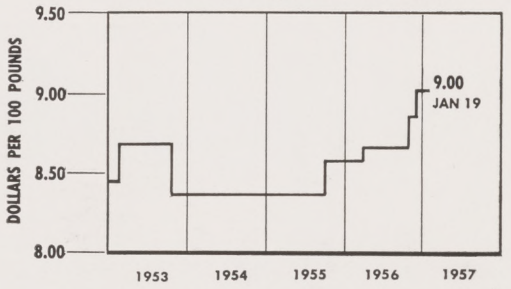
This progress report outlines the main objectives of the Spreckels variety improvement program—its present position and expectations for the future. Improvements in variety performance have been made in present commercial varieties ranging from 5 to 15 percent in yield. But as the bar charts illustrate, still larger increases should result when the present varieties are superseded by carefully chosen hybrids.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers.
Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.
AUSTIN ARMER, Editor SPRECKELS SUGAR COMPANY WOODLAND, CALIFORNIA

Apr 23 '57

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 21 MARCH—APRIL, 1957 NO. 2

10

HOW DO YOU THIN YOUR BEETS?

With hand labor, most probably. But hand labor is fast becoming more difficult to obtain, more costly, less skillful.

It is time to take another look at the advantages of machine thinning. See page 10.

THE ACCEPTANCE OF MECHANICAL THINNING IN CALIFORNIA

By J. Byron Larson

Agricultural Superintendent, Spreckels Sugar Company

CALIFORNIA BEET GROWERS and processors have done a good deal of experimenting with mechanical thinning of sugar beets. Growers in all sections of the state have thinned strips of beets to try the method, and in many cases have thinned their entire acreage by machine.

In 1949, considerable effort was exerted by both growers and processors to develop a program of mechanical thinning. A number of replicated experiments were set up and yield data were taken.

In spite of the numerous efforts on the part of growers and processors to introduce mechanical thinning, there appeared to be insufficient incentive for its adoption by California growers. All of the experimental work, particularly the statistically analyzed replicated plots indicated that there was up to 10% loss in yield when mechanical thinning was compared to expert hand thinning. While it could be demonstrated repeatedly that the money saved in labor costs was more than enough to offset the loss in yield, growers apparently required more incentive than this to adopt mechanical thinning.

There is, however, one area in California where the traditional apathy toward mechanical thinning has been overcome. During the past two or three years, the American Crystal Sugar Company at Oxnard has been claiming some outstanding success in the introduction of mechanical thinning. Several of the Spreckels Sugar Company agricultural staff went to Oxnard to study the methods in use in this area. In the tour which we made of the valley, we had an opportunity to see several machines in operation, and talked with members of the American Crystal Sugar Company agricultural staff and a number of their growers. Our observations point up the following factors in the success of their mechanical thinning program:

1. Machines, tools and methods were substantially the same as we have used in the Spreckels Sugar Company beet growing areas.
2. All of the growers to whom we talked were enthusiastic in their acceptance of mechanical thinning. They were not concerned about the clumps of beets that the machines were leaving, or the skips in the rows that were being enlarged by the use of the thinning machines.
3. They do not believe in doing very much long handled hoe touch up. They limit their hoeing crews to the removal of weeds without paying much attention to reducing clumps of beets.
4. These growers are not afraid to leave too many beets. They believe that an attempt to reduce beets to singles by machine destroys the stand to a point where production suffers from low population.
5. Beets are permitted to grow a little bit larger for this machine thinning program than has been the recommendation made by mid-western and mountain state sugar processors. Most mechanical thinning was done at a stage of growth at least as large as would be used for hand thinning and this seemed to cause the machines to make a cleaner cut and to cover up fewer plants with dirt.
6. Numerous stand counts were made in all fields before mechanical thinning was undertaken, and the machine program determined by these pre-thinning counts.
7. One commercial operator in the Oxnard area is charging three dollars per acre for each time over with the machine thinner. In addition, several growers have their own machines.
8. Over 75% of the fields in the Oxnard area were machine thinned. Hand thinning was used only in those fields where the stands were too thin to risk further stand reduction by machine.
9. The quality of work being done by the machine in the Oxnard area did not appear to be any better or worse than that which we have experienced in other places. No checks plots were being left for hand thinning and comparison with machine thinning for yield. The only comparisons made were those comparing yields from total acreages previously thinned by hand with those subsequently thinned by machine.

We noted with particular interest that no trend in yield reduction has occurred for the entire Oxnard area over the years in which hand thinning was replaced by machine thinning.

WHY HAVE WE OBJECTED TO MECHANICAL THINNING?

In past years we have judged the merits of mechanical thinning methods by carefully replicated plots in which perfect hand thinning was the standard comparison. I believe that this is where we made our basic mistake in appraising mechanical thinning. That is because a perfect job of hand thinning is almost never realized in practice. I feel certain that much of our hand thinning is no better than machine thinning can be.

Another possible cause of error in our judging of machine thinning has been the practice of hand harvesting small plots. This is not a realistic comparison since commercially all beets are machine harvested.

Still another objection to the small plot method of comparison is that the machine thinned areas are too small to permit final adjustment of the machines to meet field conditions.

A NEW APPRAISAL OF MACHINE THINNING

When we returned from Oxnard last spring, we decided to again try mechanical thinning comparisons on a more realistic basis. We had 105 acres of sugar beets on our Spreckels Ranch 1 and we divided this into three blocks. On of the blocks was thinned

(Continued on Page 16)

SPRECKELS BUILDING NEW BULK SUGAR STORAGE BINS

SPRECKELS SUGAR COMPANY is currently building new bulk sugar storage bins at its Spreckels and Woodland factories. When completed, the two bins at Woodland will hold 20,600,000 pounds of sugar; the two at Spreckels, 15,790,000 pounds. The total amount of sugar the bins will hold when full would be enough to supply a city the size of Oakland, California for one year.

At Woodland each of the two bins will be 50 feet in diameter and 120 feet tall. Located just south of the existing five bins, they will increase that factory's bulk storage by almost 76%. The two bins at Spreckels, east of the present bins, will have the same diameter, but will stand only 101 feet. They will more than double that factory's bulk storage.

HOW THEY'RE BUILT

Two aspects of the bins' construction have aroused the curiosity of passers-by. The first is the foundation. This consists of tubular steel piles filled with concrete and reinforcing steel. At the Spreckels factory, for example, 348 piles were driven into the ground to an average depth of almost 65 feet. Each pile was driven (with a 6,500-pound hammer exerting 19,500 foot-pounds of energy) until 40 successive blows caused less than a foot of penetration. Then the core which drove the pile was removed and concrete poured into the shells. Next a reinforced concrete pad was poured over the projecting piles. This produced a solid foundation for the bins, capable of supporting their weight when full of sugar.

The second stage of construction that has excited the interest of sidewalk superintendents is the continuous pouring of the concrete for the actual bin structures. The form consists of two concentric rings of wood with reinforced steel between them. About five feet high, its shape corresponds to the cylindrical shape of the bins' inner and outer surfaces. As the concrete is poured, the form is continuously raised to a higher level. The pouring goes on without interruption, day and night, until the bin walls are completed. At the Spreckels factory this job took just 114 hours of elapsed time.

PURPOSE OF THE BINS

Altogether these new bins at Spreckels and Woodland will cost the company a little more than $950,000. What is to be gained by this heavy outlay? Savings that will benefit both Spreckels and its growers.

A beet sugar factory necessarily completes its full year's production in several months. Therefore it must store that part of its production which is not sold during the period when sugar is made. Traditionally this sugar has been bagged and then stored in warehouses, either at the factory or distribution centers.

Several factors have combined to make this method of storage less attractive than it used to be. For one thing, the cost of renting space in public warehouses in distribution centers has risen sharply in recent years. So has the cost of handling bagged sugar through a factory warehouse. Also, storing sugar in bulk and then packing it when needed permits better scheduling of packaging operations. Then there has been the growing use of liquid sugar, particularly in northern California, since the late 'forties. Obviously it is cheaper to draw on stocks of bulk sugar for liquid production than to put sugar in a bag and later open and discard the bag to make liquid sugar. Finally, increasing numbers of industrial customers want sugar in bulk form. Here too there is a saving, because there is no need for putting sugar in a bag only to take it out later.

Thus the benefits of increased bulk sugar storage to the Company are clear. What is equally important is that our growers share in these benefits. Under the sugar beet contracts offered by all California processors, permissible deductions from the gross selling price to arrive at the net selling price include the costs of outside warehousing and making special grades of sugar like liquid. To the extent that we can reduce these costs, therefore, we can increase the net selling price. And that means higher grower returns from sugar beets, as well as savings to the company.

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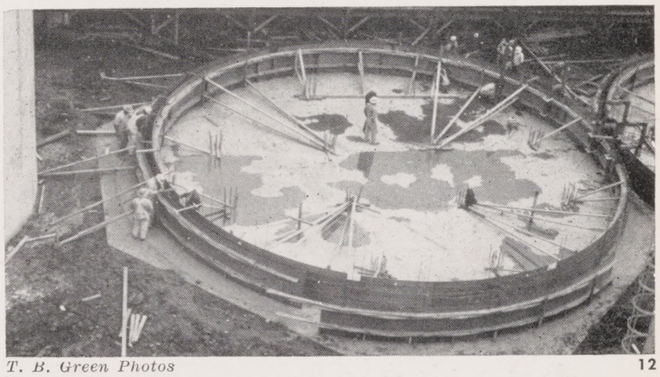
BEGINNING, MIDDLE AND END of the pile-driving job in preparation of the foundation for new bulk sugar bins at Woodland.



T. B. Green Photos

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FINISHED FOUNDATION for the new bulk sugar bins at Spreckels. Circular forms used in pouring the concrete walls are being assembled.

SPRECKELS AGRICULTURAL STAFF HOLDS ANNUAL MEETING

SPRECKELS SUGAR COMPANY Field Superintendents, Agricultural Superintendents, District Managers and Specialists met at the Mark Hopkins Hotel in San Francisco for an intensive discussion of agricultural department functions on March 13th, 14th, and 15th.

The first day's presentations were made principally by outside speakers who are experts in sugar beet agricultural technology from agencies other than Spreckels Sugar Company.

Technical papers on subjects relating to sugar beet agriculture and associated subjects were presented by staff members of the agricultural department, and the final presentation was made by executives of the sales, operating and administrative departments of the Company.

These Annual Staff Meetings have become an important institution of the Spreckels Agricultural Department. It provides an opportunity for the Field Staff to acquaint themselves with the most recent advances in agronomy, plant pathology and all the techniques which aid in profitable sugar beet growing.

Furthermore—and of great importance—the meeting permits Field Superintendents and Specialists from all sections and areas of interest to exchange ideas, and to compare experiences gathered from progressive sugar beet growers.

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WBSP STAGES SOME "SPECTACULARS"

By LEE GOODMAN

Regional Manager, Western Beet Sugar Producers, Inc.

ONE OF NANCY HAVEN'S first assignments as Western Beet Sugar Producers' home economist was to call on food and feature page editors of the various newspapers. The object was, of course, to get acquainted with these people, to tell them about beet sugar and to interest them in using our recipes.

During the last year, however, Phyllis Kuckuck (the Nancy Haven for the California-Arizona-Nevada region) has branched out in a spectacular way. It started eleven months ago with the San Jose *Mercury-News,* and more specifically with the newspaper's excellent Sunday Magazine.

What the magazine needed for its March 25 edition, Nancy assured Editor Carrol Hurd, was an illustrated article about various cakes appropriate to the Easter season. Cakes made with beet sugar, of course. And then she outlined in detail the kind of cakes she could prepare—an Easter Bunny cake, an Easter Egg cake, a Settin' Hen cake, a Hat Box cake and others.

When the magazine came out, there on the front page was Nancy Haven in full color. And on page 3 of the magazine was the article, along with four other pictures of Nancy and various cakes.

One of the most significant aspects of this "spectacular," and of the others which have appeared in various publications since, is the readiness shown by editors to use our material on beet sugar. It must be carefully and accurately prepared, of course, and it must be "newsy"—that is, it must be of service and information and interest to the reader.

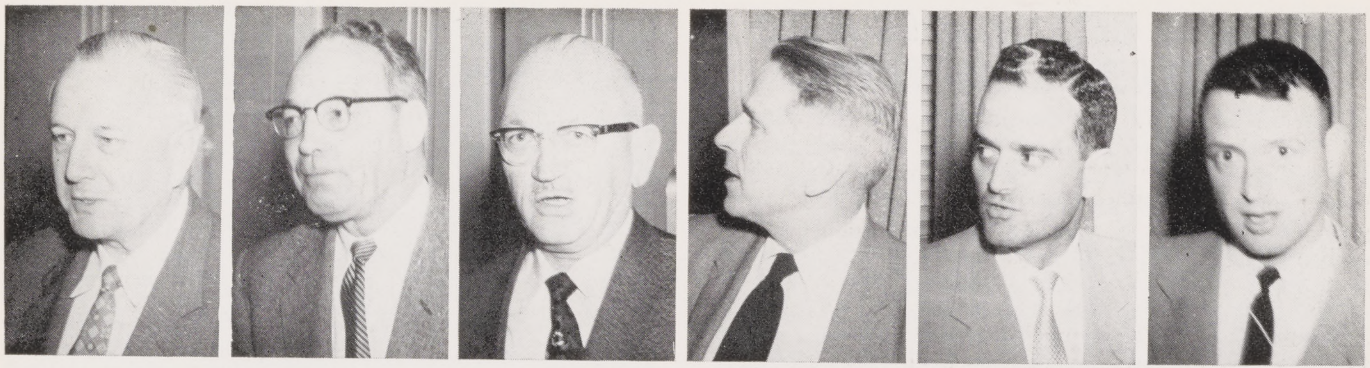
Take, for example, the Nancy Haven Recipe-of-the-Month which we are now distributing to 150 newspapers in the California-Arizona-Nevada region. This is in effect a cooking column offered to editors without cost. It is attractively set up. The recipes have carefully been tested. They are attractive and they are keyed to the season. And for these reasons they are welcomed by editors.

At the bottom of the Recipe-of-the-Month column there is a listing of recipe booklets available from WBSP. Nancy Haven, meanwhile, offers the booklets during her various appearances on radio and TV, at schools, and before women's groups and organizations.

The interest being aroused by these and the other Nancy Haven activities is suggested by the fact that during the past three months we mailed out 88,290 of these booklets. When you recall what a struggle it is to address, seal and stamp 100-or-so Christmas cards, you get an idea of the volume of this mailing.

Meanwhile the Los Angeles WBSP office has been busy turning out numerous articles of the type newspapermen refer to as "straight news" copy—that is

(Continued on Page 16)



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Dr. Lysle Leach
University of
California

Walter Ball
State Department
of Agriculture

Gordon Lyons
California Beet
Growers Association

Dr. Albert Ulrich
University of
California

F. Jack Hills
U. C. Agricultural
Extension Service

Dr. Robert Loomis
University of
California

THESE MEN are outstanding in their contributions to California agriculture in general and sugar beet agriculture in particular. They presented valuable information at the Agricultural Staff meeting.

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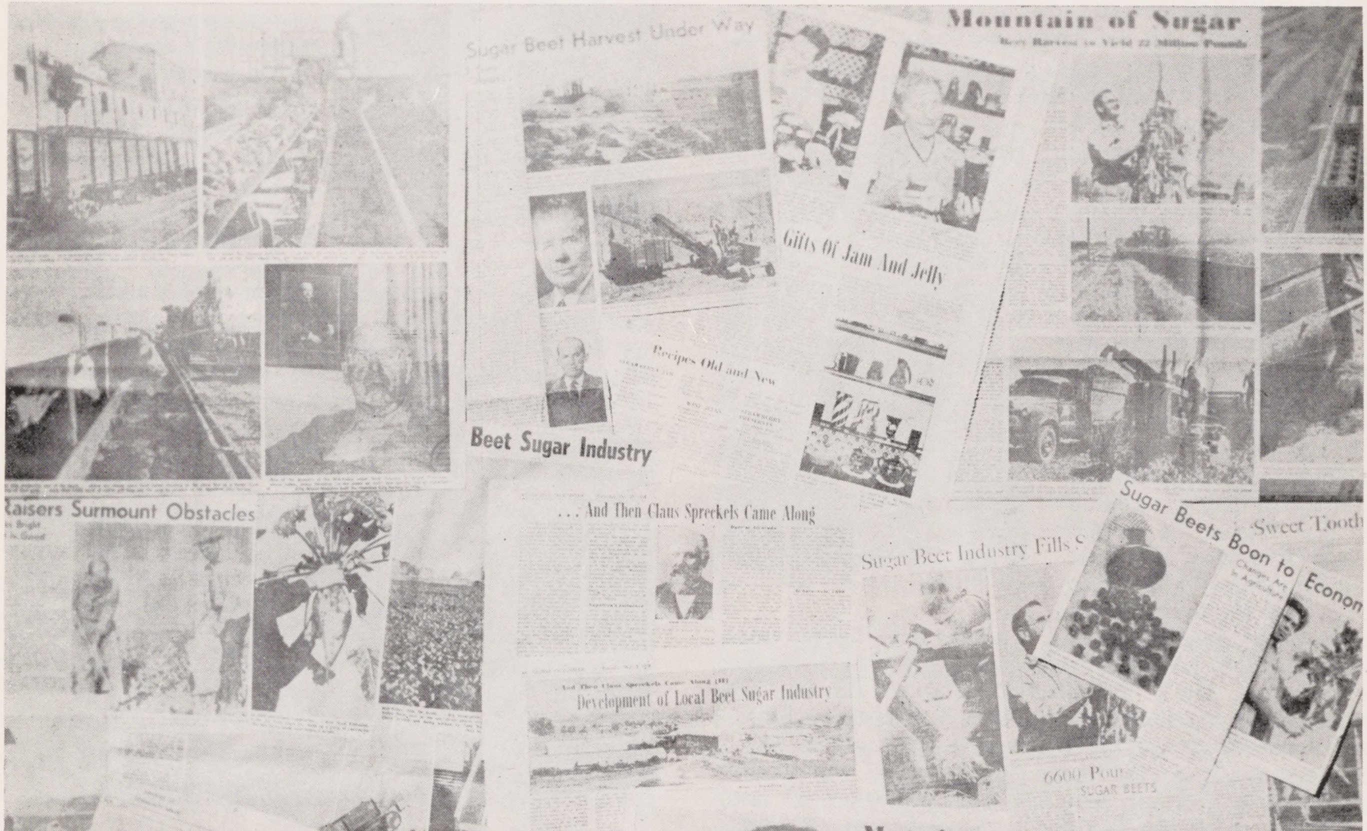

Sugar Beet Harvest Under Way

Mountain of Sugar

Beet Harvest to Yield 22 Million Pounds

Gifts Of Jam And Jelly

Recipes Old and New

Beet Sugar Industry

Raisers Surmount Obstacles

. . . And Then Claus Spreckels Came Along

Sugar Beet Industry Fills S

Sugar Beets Boon to Econom

Sweet Tooth

Development of Local Beet Sugar Industry

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SUGAR BEETS

W.B.S.P. Photo

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THESE CLIPPINGS are a small sample of the tremendous amount of space devoted to telling the facts about beet sugar to the Western public.

4-H SUGAR BEET PROJECT AIDED BY SPRECKELS STAFF MEMBERS

NEW INTEREST has developed in the 4-H Sugar Beet Project initiated by the U. C. Agricultural Extension Service. This is the result of a new leadership program developed by F. J. Hills, T. F. Torngren, R. F. Davis, R. C. Pearl, and Susan McKillop of the Agricultural Extension Service. They worked as a joint committee which included four members of the Spreckels Agricultural Staff and developed a Leaders' Guide supplementing "Sugar Beet Magic," the two-part publication used by 4-H club members.

Active leaders in the project are Harold Voth, Field Superintendent at Spreckels, and John McDougall, Field Superintendent at Woodland. Each leader has enrolled an enthusiastic group of 4-H club members, who have already embarked on their 1957 beet project by preparing land and planting their plots.

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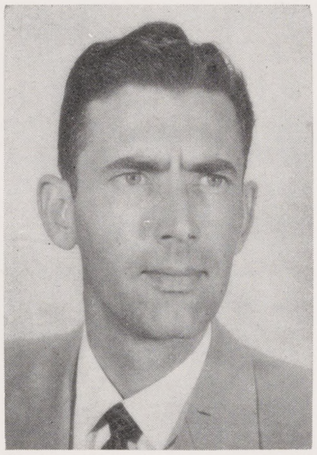
4-H MEMBERS visited the seed processing plant at Woodland. (L to R) Fred Lorenzen (Seed Station Superintendent), Richard Findley, Albert Rose, Bill Findley, Bill Foy, Gary Rominger, and Project Leader John McDougall, presenting beet seed to the boys.

Notes From Our Field Men

Field Superintendents report items of unusual interest so that others on the agricultural staff will have the benefit of their findings.

These columns will, from time to time, report those items which seem to be of direct value to sugar beet growers.

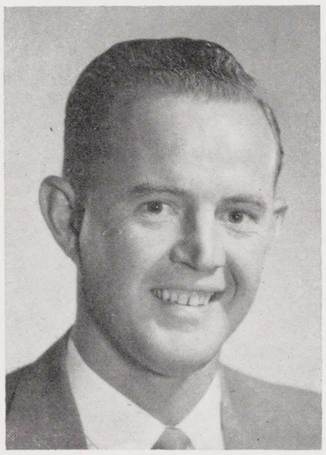
W. R. DUCKWORTH, WOODLAND



Superior Photo Service 18

"The perennial discussion among fieldmen as to the advantages or disadvantages of various row spacings seems to have subsided during the past few crop seasons. In my own case, I feel that yield differences due to row spacing are not observable in the field. Fortunately or unfortunately, my district has four major row spacings, grouped by specific areas. Tudor is a 30″ single row area, Nicolaus predominately 28″ single row, Del Paso Predominately 22″ single row and Factory 3 a 14x26″ area. The average yield for the major areas, including Nicolaus in the Tudor district, is approximately the same. The extremes for the districts also approximate each other. Each of the three districts had two growers that made over 30 tons per acre, and one grower at Tudor had a 106 acre field that averaged 34 tons per acre. Low yields were also present in all areas; however, these were due to disease or mismanagement, not row spacing."

VERNON D. SHERWOOD, SPRECKELS



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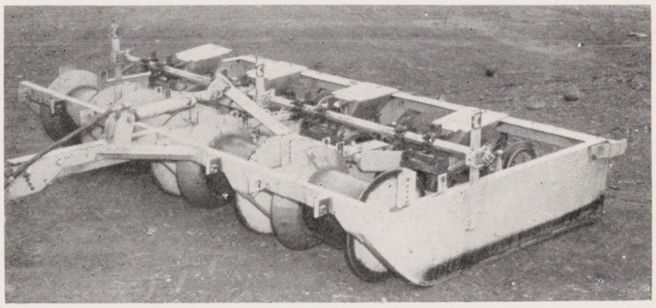
"A new tool which combines some good cultural and cost saving practices has found its way into the Gilroy area. I must say at the outset here that I have not seen it work because of its not being built in time to be used during our planting season. However, the tool is not entirely new in that its owner states he has seen it used extensively in the Imperial Valley.

"It is basically a bed shaping, planting, and cultivating tool combined. The fundamental feature that makes this a combination unit is a spool type bed shaping unit that so forms the planting bed at planting time that after planting has been done, planters are replaced by cultivating tools. The owner states that this spool type shaper follows the planted formed bed and greater speed can be obtained during cultivating. Up to three times as much ground can be covered."



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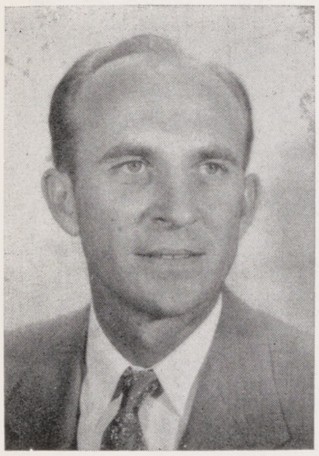
SHAPES BEDS—plants—cultivates. Made by K. C. Welding, Inc., El Centro, this sled has "spools" which firm beds; then ride on beds as guide for subsequent operations of planting and cultivating.

S. S. ANDERSON, MANTECA


Superior Photo Service 21

"This spring there have been several good examples of what a mechanical thinner can do.

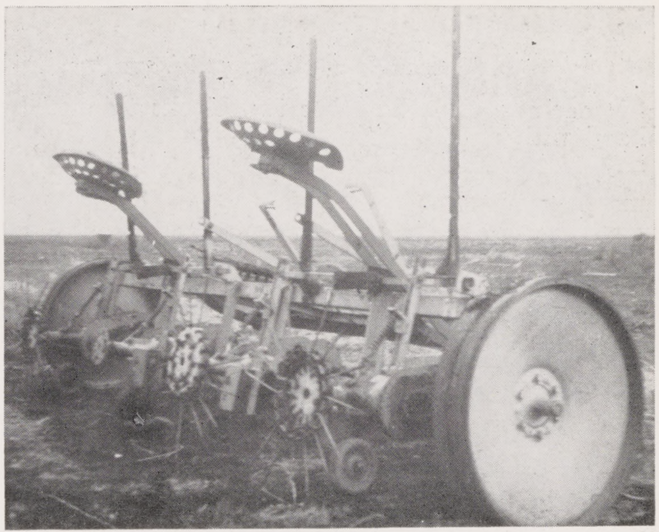
"One example was a field in which a heavy stand of watergrass had started, and because of rainfall the thinning was was delayed. Things were rapidly getting out of hand and the grower had almost decided the best course to follow was to replant. However, instead he went through the field with spring tine weeder heads on a Silver thinner. This was done twice, and it did a very good job of destroying the watergrass. In this case the beets were well established and the watergrass still had a very delicate root system. After this operation they were By-rotary cultivated and a thinning crew, working by the hour, at a cost of $25.00 per acre, left him 200 beets per 100 ft. of row.

"Because of the success of this operation, this grower is using the thinner in his other fields even though they are weed free. He claims it is like giving them an application of fertilizer because of the way in which the beets start growing vigorously. Also it mulches the soil to conserve moisture and makes it easier for the thinning crew.

"Two fields in this area were infected with damping off and beets kept dying every day up until thinning time. Under the conditions we couldn't tell the beets with good roots from the diseased ones by appearance. It was too risky to thin them for fear the thinning crew would leave diseased beets which would die later. We decided to use a tine weeder on a mechanical thinner with the thought in mind that it would knock out the diseased beets with the fragile brittle roots and leave the good beets. It turned out very satisfactory and from now on my recommendation in diseased fields will be this procedure."

"Recently I had a discussion with Mr. H. 'Chris' Crecelius about his farming methods and ideas on thinning, both by hand and mechanical. Mr. Crecelius is in an excellent position to observe the end result of thinning in sugar beets. Besides growing a substantial acreage of sugar beets, he does custom harvesting on rather a large scale. Who gets a better look at the results of thinning than a harvester operator?

"Chris bought four two-row Dixie choppers, welded them together to give him two four-row machines. They were then equipped with silver thinning heads and also most important of all, each thinning unit can be raised individually by the operator on the thinner. Rows which have poorer stands can then be skipped with the mechanical thinner units.


S. S. Anderson Photo 22

REBUILT DIXIE thinner as designed and used by Horace Crecilius.

Chris uses only the spring tine weeder heads one or two times over, depending on the conditions, prior to hand thinning. Timeliness is important in all these operations, especially using the tine weeders. This should be done when the beets are small. His experience is that the blocker thinning heads defeat the purpose of a good stand by leaving too many skips.

"After the tine weeders have done their work, select a good hand crew and let them work by the hour, being well supervised by the grower himself. Ask them for a six inch spacing and be in the field to see that it is done.

"Each year he checks the costs of beets thinned without the use of his Dixie thinner, and on the average of three years he has saved $10.00 per acre by using the machine. $20.00 per acre thinning costs with the machine, and $30.00 per acre without. Also by using labor working by the hour he has got a better thinning job, thus a larger yield. He said, 'I would rather pay $15.00 more per acre and get a good thinning job, because I know I would get it back many times in yield. Thinning at any cost is cheap if it is a good job.

"At harvest time good stands produce many smaller uniform beets, which in turn gives you better yields and better root recovery."

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

OUR MASTHEAD is part of the new format of the SPRECKELS SUGAR BEET BULLETIN. Typography and arrangement have been redesigned for improved appearance and greater readability.

MECHANICAL THINNING

(Continued from Page 10)

by machine, and the other two blocks thinned by hand with a commercial crew who were not given any special instructions. Following is a tabulation of the yield results from the two types of thinning:

	Machine Thinned	Hand Thinned
Tons Per Acre	20.79	20.03
Sugar Percent	13.807	14.35
Sugar Lbs. Per Acre	5,742	5,753
Hand Labor, Cost Per Acre	$14.16	$49.38
Net Gain Per Acre	$35.22	

The first thing which stands out in this tabulation is the fact that there was no signficant difference in the pounds of sugar per acre. The second outstanding feature is the large net gain in dollars, resulting largely from the high cost of hand thinning, which when added to the cost of hand hoeing come to almost fifty dollars per acre.

We believe that we have demonstrated there that in areas such as the Salinas Valley where the cost of hand thinning is extremely high, the introduction of mechanical thinning even at the present state of the art can yield very significant financial returns to growers who will make the change. In those parts of the state where hand thinning labor is available at low cost, it might be difficult to demonstrate a fiancial gain by changing to mechanical thinning, although there are many reasons why the elimination for the need of peak labor supply could be beneficial to any community.

In short, we have seen an entire beet growing area of California converted from hand labor to machine thinning, and we have seen without exception, enthusiastic acceptance of machine thinning by the growers in this area. That is why we believe that other parts of the state where high labor costs prevail could profitably accept machine thinning.

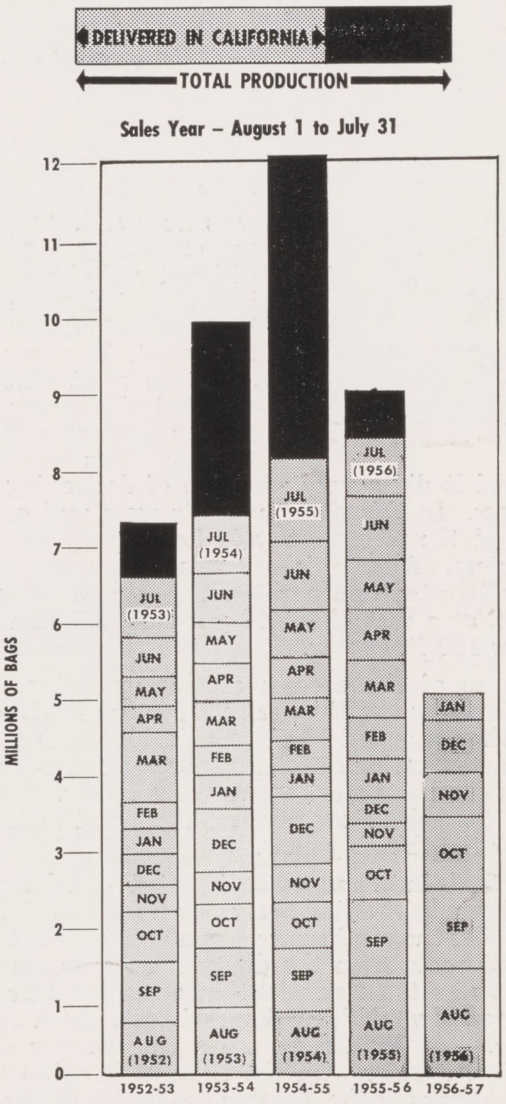
WBSP

(Continued from Page 12)

stories which appear in the general news columns rather than in special sections. Examples are articles on progress in nematode research, how the harvest is coming along, results of the harvest, developments growing out of the Sugar Act and the like. Returns from our press clipping service show that such stories have appeared in all of California's daily newspapers and in virtually every weekly published in the 31 beet-growing counties.

Scores of fine stories have arisen from conventions and other meetings we have been invited to publicize—the American Society of Sugar Beet Technologists convention, conferences of the California company technologists, state-wide growers' meetings, a convention of the nation's agricultural economists, and so on.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



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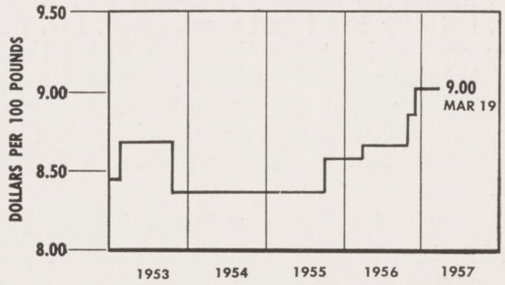

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AUSTIN ARMER, Editor SPRECKELS SUGAR COMPANY WOODLAND, CALIFORNIA

Jun 20 '57

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 21 MAY-JUNE, 1957 NO. 3

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NEW IMPLEMENTS FOR THE BEET GROWER

are often originated and built by the growers themselves

THINNING

CULTIVATING

HARVESTING

have all been mechanized—the newest machines to do these jobs are described in this issue.

A NEW SYSTEM OF ROW CROP FARMING

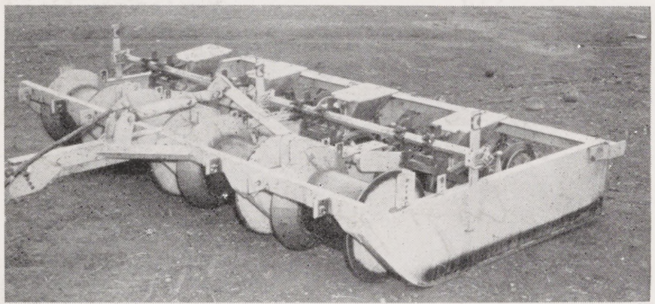
By AUSTIN ARMER

Agricultural Engineer, Spreckels Sugar Company

CALIFORNIA FARMERS have a strong tradition of building and using unusual machinery to meet unusual cultural conditions. In keeping with this tradition a new tool has made its appearance in the beet fields of California. But along with the tool (and probably without the users and inventors being aware of it) has come a definitely new system of row crop farming.

The new tool is not particularly dramatic in its appearance or performance—it is merely a sled such as has long been used for bed planting of sugar beet and other vegetable crops, but it has a very special feature. It has a series of tool bars provided with hydraulic lift, and upon these tool bars may be mounted a succession of tools for various cultural operations, all of which are kept rigidly on the row by virtue of the sled's ability to retrace its previous path with almost mathematical precision.

The first of these path-retracing sleds which came to this author's attention was one built in some numbers by K C Welding, Inc., El Centro, California.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SHAPES BEDS—plants—cultivates. Made by K. C. Welding, Inc., El Centro, this sled has "spools" which firm beds; then ride on beds as guide for subsequent operations of planting and cultivating.

This sled utilized a set of rolling spools which accommodated the top and slopes of the beds previously formed. Thus the KC sled could be used first for bed shaping, second for planting and third for repeated cultivation. All that was necessary was to change from bed shaping tools to planting units, then to cultivating disks and sweeps, any of which could be mounted on the same tool bars and all of which would retrace the original line of travel with remarkable accuracy. Even after the furrows had been filled with irrigation water and the bed shoulders rather badly broken down, the sled followed its original path.

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THE COVER PHOTO shows Bill Pryor cultivating Arnold Collier's beets for the second time, using the furrow-following planter-cultivator which he built to Arnold Collier's plans.

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ARNOLD COLLIER, designer of the furrow-following planter-cultivator.

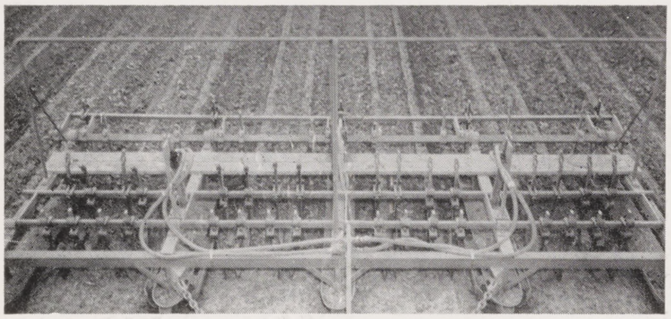
A grower for Spreckels Sugar Company, Mr. Arnold Collier of Dixon, without having heard of the KC machine, built a sled of his own design in his farm work shop. This sled differed from the KC sled in that rolling guide spools were not used, but the sled runners were designed as boat-shaped members which fitted the contour of the furrows and which, regardless of the number of times over the field, would always follow the original path because of their close fit with the furrow contours.

Arnold Collier has so far used this sled for planting and twice cultivating 449 acres of sugar beets.

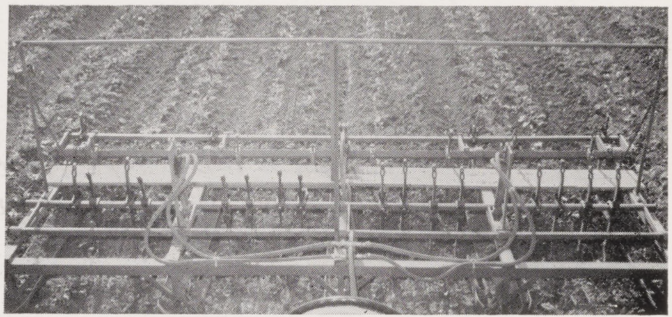
MACHINE CREATES METHODS

The machines described above are not particularly spectacular—sled planters have been in use for years, and sleds have been provided with a variety of tools for doing different operations. For example, the planting combines used in the Woodland area perform the operations of listing, bed shaping, fertilizing and planting in a single pass.

The thing that is unique about these new cultivating sleds is that they take advantage of a principal apparently never before used in row crop farming. That is the retracing of an original path by



FIRST CULTIVATION—the sled runners retrace the path they followed when planter units, mounted on the tool bar, planted the seedlings now being cultivated.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SECOND CULTIVATION—the sled runners again retrace their original path—cultivator sweeps are set close to the row, yet never touch a beet plant.

virtue of sliding or rolling guide members. The ability to retrace the original path is the key not only to the satisfactory operation of individual machines, but to what would appear to be a whole new system of row crop farming whereby the tractor operator is relieved of the problem of steering accurately to the row. Once having established the direction and straightness of the row, he need no longer depend upon his steering ability to keep the tools of subsequent operations precisely aligned upon the row.

ECONOMIC SIGNIFICANCE

Consider for a moment the number of tractor hours required in a season of cultivating row crops planted on 20 inch centers. If three cultivations are anticipated, and if the tractor must be held down to a speed of two miles per hour to permit accurate steering, each cultivation will be at the rate of 1.6 acres per hour.

Now consider what happens when the speed of the tractor can be doubled to 4 miles per hour, and the number of rows cultivated at once increased from 4 to 8. The result is that one tractor driver can quadruple his hourly acreage. In other words, he could then do 6.4 acres per hour of tractor driving.

These figures are no idle speculations — Arnold Collier is actually averaging 5 acres per hour of total tractor time in the field for each cultivation of his sugar beets.

This means that he can sharply reduce the number of tractors and drivers to take care of his 449 acres of sugar beet cultivation. The single tractor driver who now cultivates all of his 449 acres of sugar beets need only cruise up and down the rows, roughly following the furrows with his tractor wheels, and yet being completely certain that his cultivating tools are on row within a fraction of an inch.

Arnold Collier claims that the 40 acres that he is able to cultivate every 8 hours has resulted in an actual saving of $75.00 every day that he cultivates.

Here is an example of a grower who has created a machine and a method which is yielding a substantial dollar saving. It seems no more than reasonable that this new system of cultural operations on row crops may be adopted by a growing number of row crop farmers, and in the aggregate will importantly reduce the cost of growing row crops of all varieties.

IMPROVED BEET THINNER OFFERED

EVERSMAN MANUFACTURING COMPANY, Denver, Colorado offers a newly designed tractor-mounted beet thinner. Dealers have been appointed to serve California beet growers.

Features of the Eversman thinner includes:

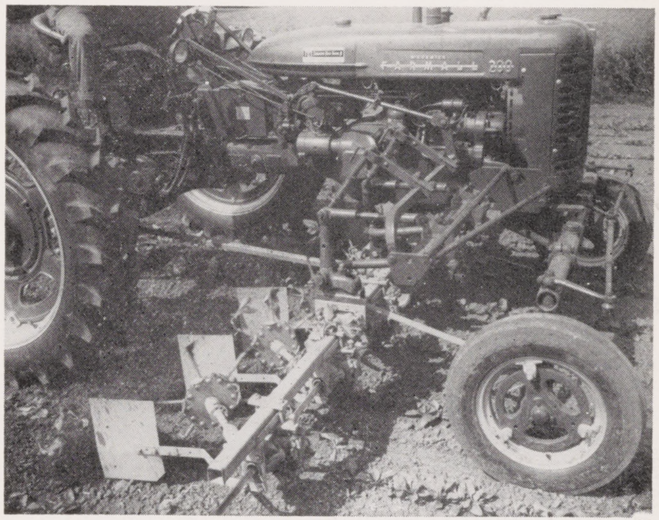
1.) Power takeoff drive for cutter wheels, affording a plant spacing selection by merely shifting gears on the tractor.

2.) Individually adjustable and indexed cutting knives to pre-determine width of cut without changing cutter wheels.

3.) Totally enclosed, permanently lubricated mechanism with cut steel gears and tapered roller bearings.

4.) Shields to overcome the covering of plants by the shower of dirt thrown by cutters on adjacent rows.

All row spacings can be accommodated by sliding individual cutter units on the transverse drive shaft. Double row beds (12″ - 28″ to 16″ - 26″) can be accommodated by traversing the field twice, with cutters operating on alternate rows.



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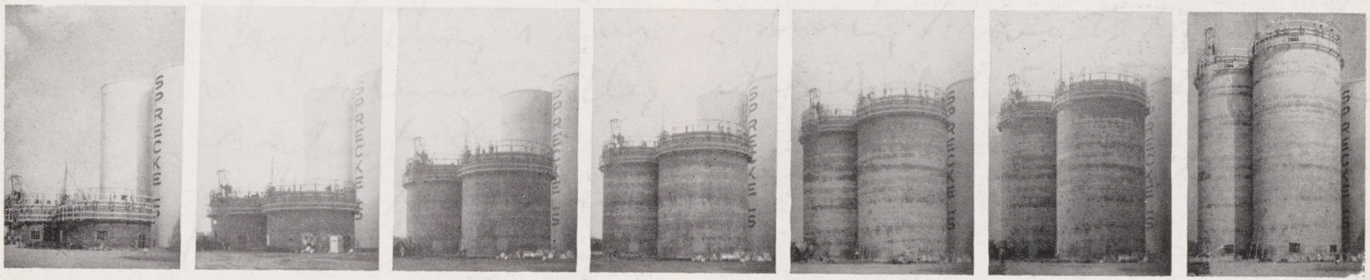
THE EVERSMAN sugar beet thinner features cutter units driven from the PTO; variable, indexed width of cut; depth gage wheels with zero-pressure rubber tires, and individual row shields.



FIRST DAY SECOND DAY THIRD DAY FOURTH DAY FIFTH DAY SIXTH DAY SEVENTH DAY

30

NEW SUGAR SILOS at the Woodland Factory were completed in seven days of concrete pouring. Circular wood forms at top were continuously raised as concrete was poured.

NEW MARBEET HARVESTER FOR 1957

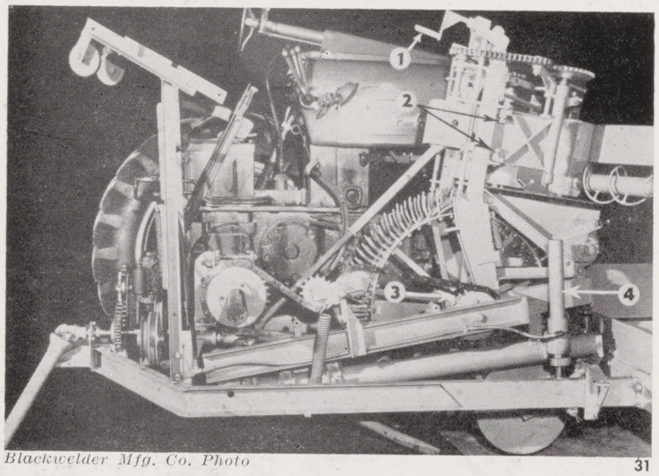
BLACKWELDER MANUFACTURING COMPANY of Rio Vista has announced a new single-row, tractor mounted sugar beet harvester. It is designated as model E-22, the figure "22" referring to the number of new design features.

Of the 22 new features, those of most interest to beet growers relate to the saving of tops. The foliage belt has been replaced by a pair of 5-sided rotating drums which shake adhering dirt and dust from the tops. As optional equipment, a conveyor elevates the clean tops to a truck alongside, while clean, topped beets are delivered to the trailing cart.

A second option is a top windrowing deflector, whereby two or three rows of cleaned tops are deposited into a single windrow for curing and subsequent baling or bulk-hauling from the field (a top pickup for loading windrows is also available—and described elsewhere in this issue).

Other features of the Marbeet E-22 include new square pickup spikes, new hydraulic controls, topping that can be adjusted for depth while the machine is running, and numerous mechanical changes aimed at better performance with reduced upkeep.

Properly adjusted, the Model E-22 will deliver well topped, clean beets under all field conditions.



Blackwelder Mfg. Co. Photo

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MARBEET MODEL E-22 harvester, with tractor rear wheel and elevator removed to show operating details. 1—Crank to adjust topping while in motion. 2—Disk pressure adjusting screws. 3—Quick-change spike wheel sprocket. 4—Simplified hydraulic lift cylinder.

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TOP LOADING ELEVATOR is optional on the Marbeet Model E-22. Tops are thoroughly cleaned before being elevated to the truck.

NEW GEMCO TOPPER AND LOADER

GENERAL MACHINE COMPANY, Ogden, Utah has appointed Caron and Oliver of Tracy as their has appointed Caron and Oliver of Tracy, as their California distributor.

The Gemco machines have been described in past issues of the Spreckels Sugar Beet Bulletin, but the 1957 models embody a number of mechanical improvements contributing to dependable operation.

The topping machine delivers tops (complete with crown) to a following truck. Topping is done with a knife whose height is gaged by a driven chain finder which doubles as a top collector. Foliage growing below the cut beet crown is scrubbed off by a rotary beater drawn by the tractor carrying the topper.

The digger-loader differs from earlier models by having a second tranverse shaker screen to improve dirt removal from the beets.

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THE GEMCO TOPPER cuts the crown from each beet and elevates the tops to a truck alongside. A trailed flail beater scrubs off side growth from the beets.

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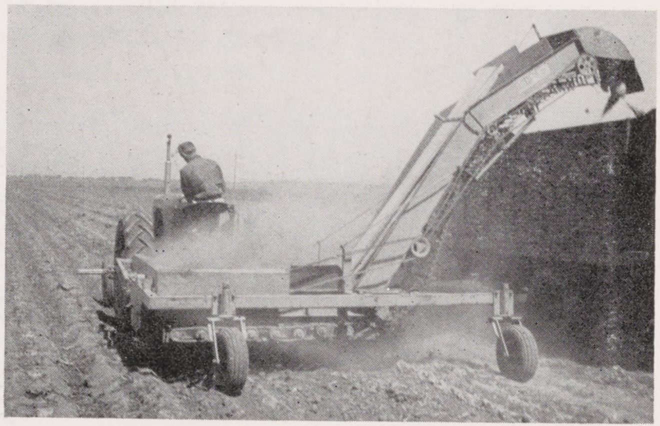
TOPPED BEETS as left by the Gemco topper are accurately crowned regardless of size, height above ground or spacing in the row.



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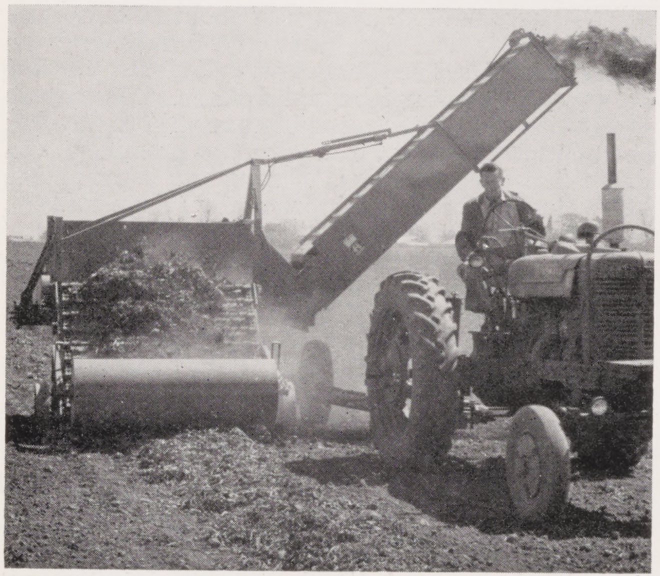
THE GEMCO DIGGER has been improved over past models by the addition of a cross-wise kicker roll screen.

NEW WINDROW PICKUP AVAILABLE

TO MEET a growing demand for a machine to pick up and load windrowed beet tops as well as other windrowed crops, Blackwelder Manufacturing Company has brought out a machine possessing a number of noteworthy features.

Beet tops are awkward to pick up—unlike windrowed grain or alfalfa hay, there is no stubble to support them away from the ground. The Blackwelder pickup meets this difficulty by providing stiff spring fingers to lift the windrow, while a rolling drum prevents pushing the windrow forward.

The new pickup-loader has been designed with the needs of the contract operator in mind. Contractors who move from field to field require a machine readily transported on the highway, yet made ready for use in minimum time. The Blackwelder pickup-loader meets this requirement by raising the pickup element and rotating the entire machine on its undercarriage.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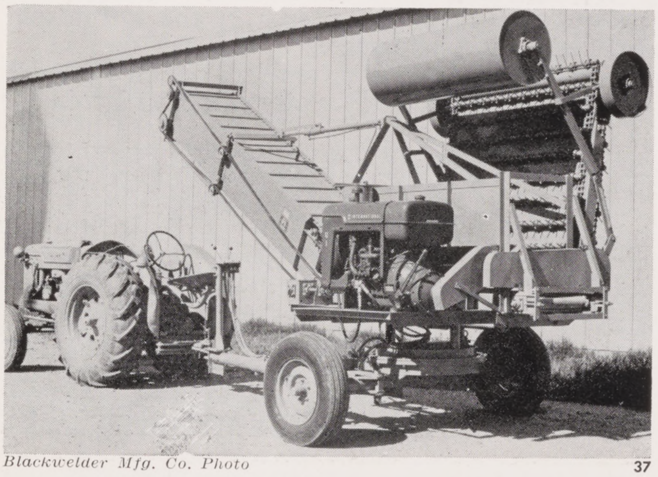
WINDROW PICKUP offered by Blackwelder Manufacturing Company picks up windrows of either green or cured beet tops, as well as other windrowed crops.


Blackwelder Mfg. Co. Photo 37

FOLDED FOR TRANSPORT on the highway. The Blackwelder Windrow pickup is quickly folded by the touch of a hydraulic control valve.

RESEARCH IN SUGAR BEETS

By GUY D. MANUEL

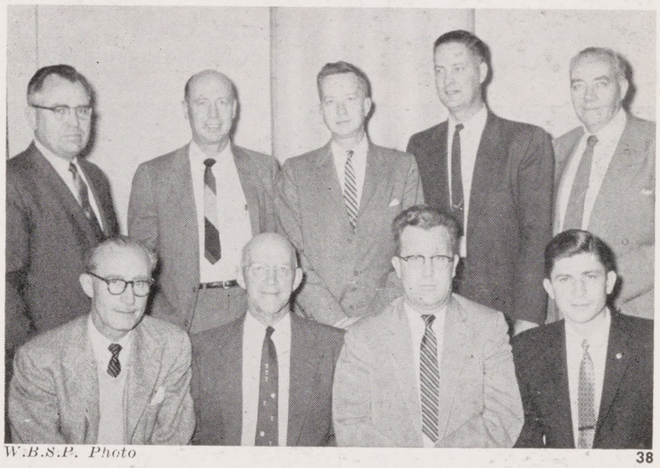
Vice President and General Agriculturist
Spreckels Sugar Company

FROM TIME TO TIME we have had articles in the Sugar Beet Bulletin concerning the research work the company has been doing to improve sugar beet yields. The background for the research our staff is doing is being supplied by government and university research programs. These programs provide the techniques, methods, and new developments that make our company program possible. To produce a new variety of beets or economical use of a new insecticide becomes a relatively simple task after the months or years of research in the fundamental background necessary to develop an understanding of the problem.

Because fundamental research is needed to continue the advancements within the sugar beet industry the Beet Sugar Development Foundation is supporting this type of research in cooperation with both the federal government and state agencies. The Foundation, which represents all the beet sugar processors, is the coordinating body of the industry on research. For 1957 the Foundation through support of the sugar beet companies is granting financial aid of over $100,000 to research programs being carried on by the U. S. Department of Agriculture and state universities.

Research to combat the sugar beet nematode has one of the top priorities within the industry and this problem is being attacked from all approaches to be sure that success will come as quickly as possible in controlling a pest that is causing heavy losses in many of our beet growing areas. The University of California is working on the hatching of the nematode

(Continued on Page 24)


W.B.S.P. Photo 38

OFFICERS AND DIRECTORS of the Beet Sugar Development Foundation were elected at the annual meeting of the Foundation in Colorado Springs, Colo., Feb 18-20. Seated, left to right, are C. A. Lavis, Holly Sugar Corp., Vice President; Vernal Jensen, Amalgamated Sugar Co., President; P. A. Reeve, Farmers and Manufacturers Beet Sugar Association, Vice President; James Fischer, Secretary-Treasurer. Standing, left to right, all directors, are H. P. H. Johnson, American Crystal Sugar Co.; Bion Tolman, Utah-Idaho Sugar Co.; Alden Stock, Union Sugar Co.; Russel Johnson, Spreckels Sugar Co., and Phil Smith, Great Western Sugar Co. Directors not shown are H. E. Ellison, Layton Sugar Co. and Past President G. D. Manuel of Spreckels Sugar Co.

ANOTHER OUTBREAK OF THE YELLOW-STRIPED ARMYWORM?

By W. HARRY LANGE,
Associate Professor of Entomology,
University of California, Davis

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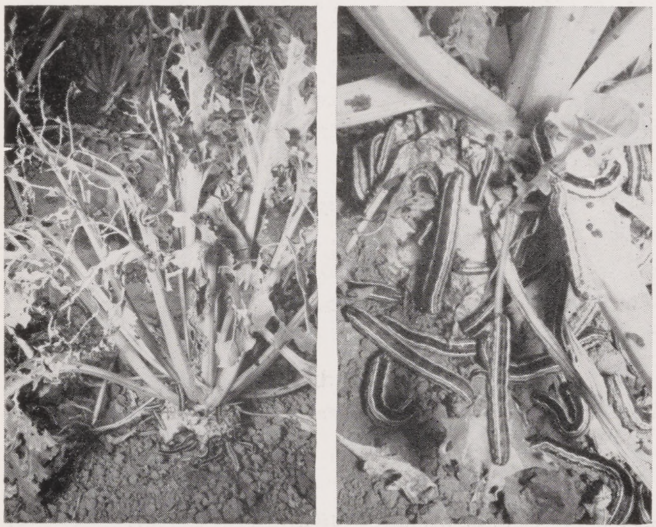
THE UNPRECEDENTED 1956 attack of the western yellow-striped armyworm, *Prodenia fraefica* Grote, has alerted growers of sugar beets to the possibility of a 1957 attack. Fortunately severe attacks are cyclic and a repetition of 1956 is not expected this year. Growers should watch their fields carefully, however, and also adjacent alfalfa fields, as young worms are often easier to control than older ones. DDT and toxaphene sprays, dusts, and barriers, will give protection if applied in time.

This armyworm is a general feeder on beans, tomatoes, corn, cotton, soybeans, melons, grapes, fruit trees, alfalfa, potatoes, rice, barley, sugar beets, onions, carrots, and many weeds of all types. Damage to beets often follows the armyworms' migration from adjacent newly cut alfalfa. Unlike many cutworms, they feed upon the plants and readily migrate as an army to feed on leaves, stems, and crowns of sugar beets. Severe attacks often strip the leaves and only the leaf petioles remain intact.

Pupae overwinter 1½ to 2 inches in the soil and the first adult moths appear the middle of April to start the first generation. The second generation appearing in late June through late July is the one damaging sugar beets. A third generation starts the middle of July and ends in September. Sometimes a partial fourth generation is completed.

The eggs are laid in felt-like masses on the leaves due to a covering of body scales by the female. Up to 1,000 eggs with an average of about 500 eggs per mass are laid. The eggs hatch in 3-5 days, and the young caterpillars are gregarious and skeletonize the leaves, often causing localized damage. The mature sixth or seventh instar caterpillars are 1½ to 2 inches long, and are velvety black with two prominent and many fine yellow stripes. During the summer the larval stage is completed in from 21-27 days, and the pupal stage in 16-22 days.


40

LEFT—severe attacks often strip the sugar beet leaves and only the petioles remain intact. **RIGHT**—mature caterpillars are 1½ to 2 inches long, and are velvety black with two prominent yellow stripes.

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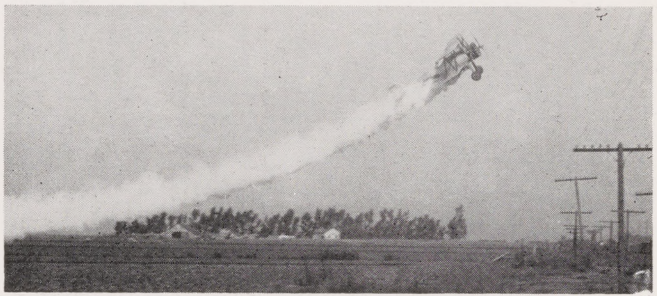
DAMAGE TO BEETS often follows the armyworms' migration from newly cut alfalfa. Alfalfa field on left, sugar beets on right in this photograph taken near Woodland last July.

The adult moths fly at dusk and at night, have a wing expanse of 1½ inches, and possess an intricate pattern of slate and buff markings. The hind wings are silver and gray. The sporadic nature of attacks by this worm are undoubtedly correlated with climatic factors, diseases, and parasites. A polyhedral virus disease destroys large numbers of caterpillars. The flaccid, disintegrating, reddish-brown caterpillars hang dead from the plants. At least ten wasp and fly parasites are known to attack the eggs, larvae, or emerge through the pupae in the valley areas of California. One species, *Chelonus texanus* Cresson, oviposits in eggs of the host, emerging through the larvae. *Hyposoter exiguae* (Viereck) emerges through fourth instar larvae. Many parasites such as *Meteorus vulgaris* (Cresson) and *Apanteles marginiventris* (Cresson) lay eggs in the larvae and emerge through the pupae.

A careful watch for caterpillars should be made during June and July when attack is most imminent.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MOVE FAST, if attack starts. DDT at the rate of 1 to 2 pounds actual chemical per acre is usually effective applied as dust or spray. Toxaphene at 2 to 3 pounds per acre can be used

Watch for "build-up" in adjacent alfalfa as caterpillars will move out and feed on adjacent beets.

If attacks start, MOVE FAST—chemicals must be applied within a few days or severe damage may result. DDT at the rate of 1 to 2 pounds of actual chemical per acre is usually effective applied as sprays or dusts. This amounts to ½ to 1 gallon of DDT emulsible concentrate (2 pounds per gallon), or 20 to 40 pounds of a 5% DDT dust per acre. Toxaphene at 2-3 pounds of actual chemical can be used. This amounts to ⅓ to ½ gallon of emulsible concentrate (6 pounds per gallon) per acre. Older worms may often be controlled more readily with a mixture of DDT and toxaphene applied as a spray or dust. Air applications are usually necessary as speed is essential.

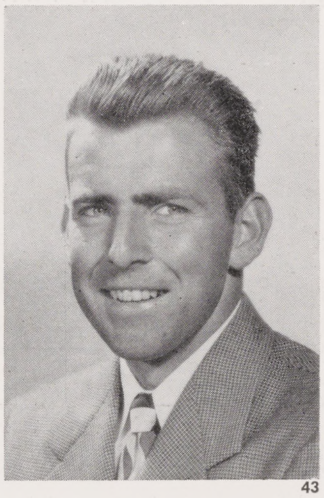
Worms can be prevented or deterred from migrating by using barriers of 10% DDT or 10% toxaphene prior to cutting of alfalfa. Water barriers are not too successful. In making a chemical barrier plow a ditch around the field, throwing the plowed soil away from the field to be protected. Use 4 to 6 pounds of insecticide dust per 100 feet of barrier in a band 8 to 12 inches wide. Renew every 5-7 days if necessary.

Notes From Our Field Men

Field Superintendents report items of unusual interest so that others on the agricultural staff will have the benefit of their findings.

These columns will, from time to time, report those items which seem to be of direct value to sugar beet growers.

E. B. MOELLER,
Manteca: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"Last week I had the opportunity to visit the south coastal beet growing area and observe mechanical thinning in action. It was very interesting to see how it is done in that area. Of course, the first thought is to apply their methods to the San Joaquin Valley. Immediately three fundamental differences appeared:

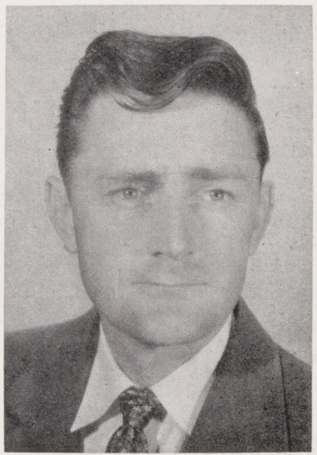
A. SOIL UNIFORMITY—The soils in the beet growing areas of the San Joaquin may, and usually do, vary from sand to loam and to clay alkali all in one row. This is not the case on the South Coastal areas.

B. SEEDING RATE—These growers use the same type of planters as we do, but the seeding rate per acre is only about half as much as we recommend for the San Joaquin Valley. Hence, there is less work for the thinner to do.

C. THE TYPE OF MECHANICAL THINNER—I did not see any pull type thinners in use. The types generally in use are tractor mounted. This adds a quality to the work which cannot be obtained with a pull type thinner.

"It is my opinion that if we consider it safe to reduce the seeding rate per acre and use tractor mounted type thinners, mechanical thinning will be successful in the San Joaquin Valley."

J. R. McDOUGALL,
Woodland: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"Our trip down the coast was most interesting, particularly in regard to mechanical thinning, which is very popular along the southern coast.

"The main points observed by these southern growers are:

First, to forget completely about hand thinning.

Second, except for thinning the beets at a larger size, to follow the Silver Engineering Company instructions as if it were a recipe.

Third, make at least ten stand counts per field or in larger fields one per five acres. Accurate stand counts are definitely a 'must.' Stands of 34 to 54 beet containing inches per 100 inches are acceptable.

Fourth, roll with flat roller before thinning. Cultivate after thinning unless weed conditions deem it necessary to precede thinning. After first time over, wait approximately three days and go over with the next proper head.

Fifth, do not use any additional hand labor except for hoeing weeds, which should cost from $5.00 to $10.00 per acre.

"The stands that they have ended up with are excellent in appearance with many singles, less doubles and not too many clumps. However, the gaps were from two to three feet in length, and under watergrass conditions, would not be very desirable."

DEVELOPMENT FOUNDATION

(Continued from Page 21)

cysts through a grant provided by the Foundation. A better understanding of the hatching of the cyst will be helpful not only in development of new nematicides, but will aid other scientists who are working toward resistant varieties of beets. To date the project has done little more than develop techniques and methods but here again these techniques must be devised before other work can be carried on so are necessary building blocks in any successful research program.

In the plant breeding phase of nematode control the work has taken two paths. The first has been to screen thousands of sugar beets with the hope that resistance or at least some tolerance might be found. This type of program would give immediate relief if such a beet could be uncovered and was felt to be a worthwhile approach. This phase is largely being done by U. S. Department of Agriculture workers at the Salinas station, and in addition, individual companies are also aiding in this project. There appear to be some differences in susceptibility of beets to nematode attack to the point where the research people believe this program has enough merit to continue.

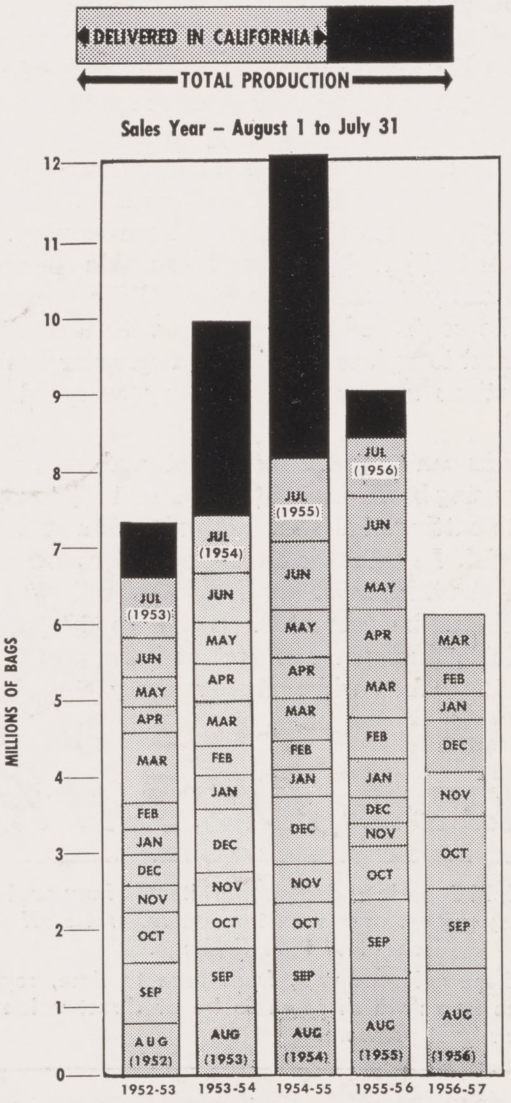
Another interesting aspect of sugar beet nematode research has been a widespread survey of nematodes in many of the beet growing areas to determine if there are different species of nematodes in the different areas, yet all attacking sugar beets. This work again is a cooperative effort of the U. S. Department of Agriculture and the Foundation.

Along with nematode research the problem of virus yellows is receiving considerable attention. The extent of this disease seems to grow every year. While it is known that an aphid transmits the virus the effect on a crop of beets is not too well understood. While the pathologists are working on these problems the plant breeders are giving them material to test, some of which appear to show fewer symptoms of the virus than others. With such activity and cooperation on all phases of this problem one can feel optimistic about its outcome.

The plant breeders are also working along many new lines now that hybrid sugar beets are a reality. However, the answers to many of the fundamental steps in a hybrid program are still lacking and to develop the program to its fullest these must be found out. For this reason, the industry has been constantly encouraging the government to continue its fine work.

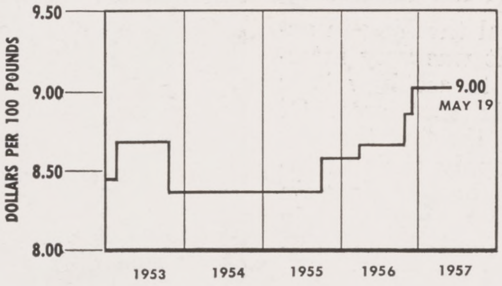
The Foundation has also been sponsoring work on storage of beets and nutrition as they affect sugar content and growth. Thus none of the possibilities toward bettering the crop are being overlooked. While yields of sugar have been steadily going up during the past ten years in all of our growing areas, with the research now under way we feel that the yields can continue on up possibly even at a faster rate than the last decade.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The **SPRECKELS SUGAR BEET BULLETIN** is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.
AUSTIN ARMER, Editor
SPRECKELS SUGAR COMPANY
WOODLAND, CALIFORNIA

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 21 JULY-AUGUST, 1957 NO. 4

Aug 20

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USEFUL AS WELL AS ORNAMENTAL

Sugar beet foliage is a valuable feed for

DAIRY CATTLE
BEEF CATTLE
LAMBS

Beet growers profit from its sale — the community profits from its utilization. See page 26.

BEET TOPS—AN ADDITIONAL SOURCE OF INCOME

By AUSTIN ARMER
Agricultural Engineer, Spreckels Sugar Company

TURNING SUGAR BEET TOPS into dollars is something which growers for Spreckels Sugar Company have been achieving with new vigor over the past year.

That beet tops can be an important addition to the income of the beet grower is not a new concept—in years past it was customary to pasture the tops after the crop had been hand harvested. However, with the advent of mechanical harvest, the utilization of beet tops was neglected, and the Spreckels Sugar Company felt the need for a research program to make mechanical harvest compatible with beet top recovery.

THE SPRECKELS EXPERIMENTAL PROGRAM

Early in 1956, preparations were made to do some experimental work with beet top recovery during the 1956 Spring Harvest. Small scale experiments in the ensiling of chopped sugar beet tops were conducted near Woodland and some very valuable experience gained in the do's and don'ts of ensiling.

Meantime, a good deal of work had already been done by growers, particularly in the Salinas Valley, on the best ways to make bales of cured tops.

During the 1956 Fall Harvest, some intensive experiments were conducted at the Woodland Factory ranch on both baling and ensiling. About 40 acres of sugar beet tops were baled, using a variety of machines and curing schedules, while about 60 acres of tops were harvested and made into ensilage.

The highlights of this investigation may be outlined as follows:

1. Any make of windrow pickup baler will operate more or less satisfactorily in sugar beet tops that have been windrowed and cured. Baling should be done after tops have cured in the windrow from 7 to 13 days after harvest, depending on temperature.
2. Satisfactory ensilage from beet tops requires considerable care, but when such care is exercised, very satisfactory silage can be produced. Precautions which must be observed include delivery of tops into the silo just as clean as possible; complete compacting to insure exclusion of air; and in most cases, the addition of a preservative such as sodium bisulfite at the rate of 8 lbs. per ton of green ensilage.

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BEET TOPS, including crowns, are delivered by the Gemco topper to a following truck in the Hansen and Barkley field near Tracy.

Reports on the early phases of the ensilage experiment appeared in the May-June 1956 issue of the Spreckels Sugar Beet Bulletin, page 22, while experiences with baling in the Salinas Valley were described in the March-April 1956 issue.

WHAT GROWERS DID IN 1956-1957

The systematic recovery of sugar beet tops by baling was done most extensively in the Salinas Valley, although some successful operations were carried on in the Sacramento and San Joaquin Valleys. Baling appears to be particularly satisfactory in the Salinas Valley, principally for reasons of climate. The relatively cool climate of this valley produces a very much larger yield of beet foliage than may be expected in the Central Valley, and the prevailing winds of the Salinas Valley are very helpful in proper curing of the tops.

In 1955, there were 16 growers for Spreckels Sugar Company in the Salinas Valley who baled all or part of their sugar beet tops. These growers succeeded in harvesting from 2 to 5 baled tons of tops per acre. In 1956, the Salinas Valley growers who baled their tops increased to 22 in number and displayed con-

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MANUEL GULARTE baled these beet tops on his ranch near Soledad. Bales were small and easily handled.

Dwain Jay Studio 49

A CLAMSHELL bucket heaps the tops delivered by the truck—makes a high, compact pile—later reloads the ensiled tops into feeders' trucks.

siderable ingenuity in the wide variety of balers adapted to sugar beet tops.

Ensilage of sugar beet tops was attempted on a fairly large scale by a number of growers in 1955 and 1956 in the Salinas and San Joaquin Valleys. It is regrettable that a number of these trials—and some of them were very large in scale—resulted in spoilage of the ensilage. A study of these cases indicates pretty definitely that spoilage could be attributed to either lack of proper air exclusion or lack of a preservative such as sodium bisulfite.

On the other hand, there were a few successful ensilage projects carried out, and one in particular is worthy of mention because of the highly systematic program which was followed.

AN ENSILAGE CASE HISTORY

Mr. Ed Silveira has been contracting the feeding of dairy and beef herds for a considerable time in the Stockton-Manteca area. During the spring harvest of Spreckels beets in April, 1957, Mr. Silveira contracted to remove the tops from the Hansen and Barkley contract near Tracy. The terms of this contract were that he was to use a Gemco Topper followed by a Rotobeater. The beets were to be left ready for digging with the Gemco Loader, and in addition to the service of having their beets topped, Hansen and Barkley were to receive $7.00 an acre for the tops hauled away by Mr. Silveira (captioned photographs of the topping and loading sequence in this operation were described in the May-June 1957 issue of Spreckels Sugar Beet Bulletin, page 20).

Dwain Jay Studio 50

DAIRY COWS RELISH beet top ensilage. 37 pounds per day as a replacement for green pasture increased daily milk production by nearly half a gallon per cow.

Mr. Silveira's Gemco Topper worked ahead of the Gemco Loader, care being taken that topped beets did not remain in the ground more than 24 hours before digging and loading. The tops, delivered into trucks, were hauled to a nearby central piling station, where a truck crane equipped with a clam shell bucket made a large compact pile of tops. Aside from the depth of the pile (approximately 15 feet) the only method of compacting was to allow the clam shell bucket to fall in a hammer-like manner on top of the pile. It is also notable that no preservatives was added to this pile, and it is probably more luck than anything else that caused the large pile to cure in a satisfactory manner. This incident is emphasized because another pile quite similar in size and method of harvest was completely ruined by putrefaction.

From the 90 acres on the Hansen and Barkley contract, 600 tons of green tops were put in the pile. This represents a yield of 6.7 green tons per acre, and the relatively low yield is attributed to the fact that this was a spring harvest, and most of the fall top growth had died down, leaving only the new spring growth.

(Continued on Page 32)

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NORMAN FRANK, Sr. baled these tops on contract for grower Maurice Kimmelshue near Woodland; trucked them to Dixon for lamb feeding.

The Honor Roll for 1957

Yields of 25 or more tons per acre were achieved by the following Spreckels growers. This record number has been exceeded in only one other year. Our heartiest congratulations.

DISTRICT 1, SPRECKELS

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Pete Vojvoda	10.0	38.80	12,447
L. C. H. Company	33.9	37.56	11,644
Mary F. & E. E. Nutting	27.5	37.99	9,961
Robert Harlan	4.3	36.75	11,738
J. G. Marinovich	25.8	35.76	11,114
Jesse G. Homen	17.2	35.62	11,156
Alvin Noll	29.6	35.39	10,709
Tony Homen, Jr.	20.2	35.39	10,150
L. C. H. Company	27.9	35.25	9,856
Albert Rohde	28.9	34.67	10,921
J. G. Marinovich	23.9	34.49	10,871
Achille Ferrasci	18.6	34.46	11,275
Sgheiza Bros.	10.5	34.10	11,253
Bob Corda, Sr.	9.9	33.74	9,494
Steidley & Uyena	39.9	33.55	9,253
Arthur W. Buzzini	35.8	32.23	9,392
John & Bob Corda, Jr.	17.7	32.18	9,396
Charles S. Gubser	8.8	32.01	9,385
Obata Bros.	84.8	31.53	9,308
Strula Bros.	10.6	31.38	9,998
Jim Fanoe	42.0	31.25	10,100
Tognetti Bros.	47.4	31.23	9,719
Lawrence Brickey	70.5	31.22	8,373
Strula Bros.	12.8	31.08	9,771
Wm. D. Crinklaw	28.2	31.06	8,150
Martella Bros.	27.7	31.01	8,925
Gerald Griffin	20.0	30.97	9,985
Bassi Bros.	17.9	30.92	9,591
James H. Watson	42.1	30.90	9,591
L. W. Herbert	36.5	30.90	9,567
L. & H. Salmini	10.0	30.78	9,572
F. S. Travers	22.7	30.75	9,914
W. L. Stacey	55.0	30.53	9,360
J. J. & A. Violini	23.7	30.41	10,269
Arcotti Bros.	13.8	30.35	10,440
Franscioni, Griva & Son	40.7	30.31	9,202
Sears Bros. & Co.	15.6	30.30	9,841
Pete Vojvoda	24.8	30.25	10,055
Wilmer Pura	12.1	29.87	8,507
Deini & Rolandi	10.6	29.82	8,838
Phillips Wyman	12.5	29.78	9,202
Leo A. & Robt L. Meyer	22.5	29.77	8,478
Maria M. Oliveira	21.1	29.49	8,652
Hugo Zamzow	18.1	29.48	7,977
Byers & Hirasaki	53.9	29.43	8,387
Joe Morisoli & Son	23.6	29.39	8,405
R. V. Boone	8.6	29.34	9,653
Angelo Corda	24.0	29.24	10,573
Pete Vojvoda	9.2	29.23	9,038
Jim Fanoe	95.4	29.20	9,724
A. S. Duarte	45.0	29.14	9,476
Raynold Buck Boone	16.4	29.14	9,051
Frank Taylor	37.7	29.13	8,547
Luis Scattini	18.4	28.92	9,098
R. Sargenti & Son	18.5	28.80	8,646
W. & S. Packing Co.	15.2	28.73	8,257
James M. Johnsen	23.2	28.72	8,300
Mary F. & E. E. Nutting	37.4	28.70	8,679
Wm. D. Crinklaw	73.3	28.70	7,749
Edward A. Johnsen	23.2	28.59	7,359
Peter Lesnini	28.5	28.50	7,752
Albert Rohde	23.3	28.49	8,416
T. R. Nishimoto	17.6	28.32	8,626
John Cernokus	40.0	28.29	8,096
O. L. Petersen	20.3	28.29	7,604
T. G. Bacciarini	28.3	28.29	7,101
Anthony Silva	77.3	28.28	7,992
Clark & Romans	63.7	28.27	8,000
Raynold Buck Boone	42.3	28.26	9,303
W. W. Johnson & Son	69.5	28.22	8,889
J. P. Braycovich Co.	18.7	28.14	9,292
Don C. Weaver	24.6	28.10	8,199
Joe Cunha	59.8	28.08	9,457
Salinas Valley Veg. Exch.	135.5	27.92	7,812
John D. Domingos	34.7	27.90	9,469
W. & S. Pkg. Co.	38.8	27.90	7,684
A. Frew	61.4	27.55	8,303
Lawrence Albertson	39.0	27.55	7,846
R. G. Wood	19.5	27.47	7,741
Bernnie S. Black	30.7	27.46	8,293
A. S. Duarte	10.5	27.39	8,129
Michael K. Reed	33.0	27.35	6,805
Joe P. Gambetta	25.9	27.14	9,445
Gularte Bros.	27.9	27.14	8,462
Raymond Martin	42.3	27.14	7,453
Castroville, Rch. & Pkg. Co.	23.4	27.07	8,890
T. R. Smith	35.4	27.06	8,600
O. O. Eaton, Inc.	21.3	27.05	9,148
Taix Company	55.7	27.05	8,710
Leo A. & Robt L. Meyer	61.7	27.00	7,895
Harry R. Semas	52.3	26.93	8,731
Schween Bros.	32.0	26.91	7,110
H. Allemand	89.1	26.88	8,849
Harold Ranches	122.0	26.81	8,692
Anne Barry Quinn	15.5	26.63	7,898
Mary F. & E. E. Nutting	26.4	26.62	7,762
Joseph Gubser	22.6	26.60	8,815
Fujii Bros.	10.0	26.58	7,719
Oscar E. & Hazel M. Betts	9.6	26.58	7,310
Turri Bros.	100.7	26.45	8,924
Arnold Bassetti	24.2	26.41	8,335
Schuman Farms	22.9	26.31	8,098
C. H. & Marie Ferrasci & Son	17.4	26.26	8,524
Arthur S. Nyland	91.8	26.23	8,084
Paul Giacomazzi	18.5	26.14	7,664
Henry Moranda	18.3	26.13	9,093
M. Da Rosa	145.7	26.11	7,681
K. Kamimoto	16.2	26.09	7,462
Lazzio & Cavalli	19.2	25.99	6,638
Gene A. Ferraro	18.7	25.89	8,218
G. P. Sgheiza	14.2	25.73	8,800
Chas. Gianolini	58.7	25.70	7,484
Tom Da Rosa	58.0	25.68	7,298
Lindeleaf Bros.	24.5	25.62	8,388
Schween Bros.	31.4	25.60	7,204
Jackson E. Vessey	17.8	25.57	8,903
Mrs. B. J. Marks	98.9	25.57	8,264
Chas. Morgantini & Sons	20.4	25.50	8,002
E. O. Parker	108.0	25.47	8,018
C. L. & A. W. Johnson	46.5	25.46	7,867
Manuel Silva	66.6	25.46	7,607
Nunes Bros.	59.8	25.45	8,368
Christensen Bros.	28.3	25.39	8,100
Franscioni & Co.	13.5	25.39	7,592
Salinas Valley Veg. Exch.	32.9	25.39	4,778
Antonio & Silveira	18.2	25.33	7,492
Charles S. Gubser	11.6	25.29	8,083
Vanoli & Bravo	21.9	25.22	6,779
Toney F. Silveira	29.6	25.20	7,988
L. J. Lazo & P. Deo Campo	24.6	25.19	7,869
Delfin Martin	28.9	25.10	8,243
Pete Vojvoda	28.5	25.09	7,878
Edward A. Johnsen	54.8	25.09	7,256
Michael K. Reed	28.5	25.07	6,508
Mariano Sanchez	113.9	25.06	8,245

DISTRICT 2, MANTECA

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Parks Bros. & Garlow Farms	97	42.21	10,536
Albert Fonseca	14	40.78	12,666
Norman Vogt	51	37.69	11,171
George S. Maze	9	37.44	9,989
Oliver Gianecchini	11	37.39	11,217
Joe Escobar, Jr.	42	35.86	9,883
J. W. Conrow & R. J. Bundgard	19	35.68	11,182
Manuel J. Gonzales	78	34.17	9,834
Albert Bevis	11	34.01	10,359
John Moore	13	33.48	10,727
Sierra Dawn Farms	6	33.47	9,425
James & R. J. Bundgard	132	32.87	9,651
Sycamore Farms	145	32.74	8,630
Q. L. Gerhart & Son	29	32.73	9,799

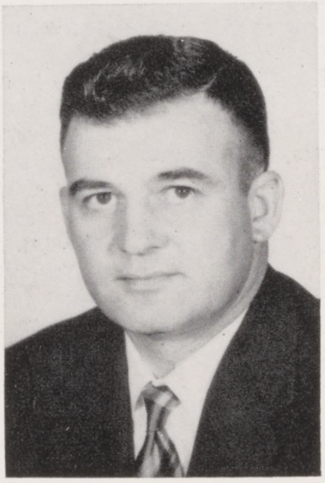
Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Angelo Lagorio	5	32.44	10,108
Grant & Wilson	70	32.38	10,180
Locke Ranch	13	32.34	10,464
Parks Bros. & Garlow Farms	30	32.23	7,838
Sanders & Sanders	102	32.00	8,819
M. E. & Frank Silva Co.	44	31.91	9,394
Donald Fink	26	31.61	9,527
W. F. Pierson	16	31.53	10,008
Joe Sabbatini	34	30.79	8,898
Albert Bevis	27	30.74	9,628
Tanaka Farms	28	30.72	10,672
Kiyoi Bros.	34	30.65	9,311
M. Coelho	7	30.54	8,191
Barnard Bros.	93	30.52	8,436
Norman F. Bundgard	47	30.36	9,284
Albert Bevis	35	30.19	9,631
Pasquale Freggiaro	30	30.03	8,282
Mike Pierini	27	29.96	7,640
Albert Bevis	30	29.95	10,291
Sanders & Sanders	70	29.78	8,934
Kennedy & Stephens	34	29.73	7,290
Fredlo Farms	69	29.68	7,616
Louis Quilici	41	29.57	9,031
John Armanino	50	29.44	9,120
Floyd V. Alcock	14	29.34	9,336
Cerro Bros.	24	29.26	7,508
H. L. Rodgers	17	29.05	9,273
Triple "J" Farms	25	28.96	7,750
Wm. H. Fisk, Jr.	42	28.91	9,274
Calolina Farms & R. E. Dargatz	22	28.91	7,811
John F. Jacobsen	67	28.79	8,050
H. B. Farms	24	28.76	8,122
Chester M. Locke	21	28.69	8,636
Ralph Panella	99	28.59	7,496
Stuart A. Lewis	10	28.56	7,711
Walter C. Williamson	27	28.54	8,282
Edwin Tognetti	80	28.50	9,451
Newhall Land & Farming Co.	80	28.44	7,679
Erreca & Harmon	57	28.33	9,094
Louis & Nick Battinich	95	28.25	8,119
Jack D. Jones	26	28.21	7,780
Oliver Giannecchini	17	28.18	8,561
Joe F. Felice	55	28.14	9,151
Tony Castanho	70	28.04	8,945
John J. Armanino	24	28.02	8,602
Louis Giovannoni & Son	45	27.92	8,488
Merrill West	30	27.84	8,552
Ed. Thoming	113	27.81	8,004
Graham Bros.	27	27.78	8,817
Martin Bros.	47	27.75	9,613
Floyd Hudiberg	21	27.74	7,418
Locke Ranch	107	27.43	7,946
John L. Miller	26	27.41	9,023
B. L. Parsons	54	27.40	8,505
Leo Thoming	42	27.25	8,802
Norman Vogt	53	27.22	8,063
Dwayne Petz	21	27.22	6,952
J. W. Mahon, Jr.	50	27.19	7,765
Hanson & Barkley	42	27.13	7,227
Robertson & Sons	25	27.08	8,384
Lester Frick	47	26.83	7,034
S. Dasso & Sons	44	26.83	8,086
Ward C. Waterman	77	26.65	6,380
Newhall Land & Farming Co.	49	26.60	7,900
Nishida Bros.	25	26.57	7,817
Bertrand & Earl Thomas	55	26.50	8,279
C. T. & T. Co.	78	26.46	7,647
Sanders & Sanders	70	26.42	6,769
John A. Davis	84	26.32	8,733
Herman Ohm	15	26.31	7,551
W. J. Greenlee & Sons	30	26.27	7,182
Fredlo Farms	61	26.24	6,366
Norman Vogt	60	26.09	7,467
Tanaka Farms	110	25.95	8,107
Newhall Land & Farming Co.	41	25.92	6,972
Banducci Farming Co.	308	25.84	6,305
Richard E. Mahon	87	25.73	8,172
Johnson & Kellogg	46	25.72	8,421
Robert S. Rorick	18	25.71	6,834
Pacific Fruit Exchange	149	25.70	7,237
John & Robt. Bogetti	68	25.66	7,744
H. E. Nagata	28	25.66	7,267
Albert J. Perry	35	25.66	6,867
Dennis W. Leary	78	25.59	6,904
Dan Branstad	39	25.58	7,592
Henry Westing	55	25.57	8,571
Newhall Land & Farming Co.	26	25.55	7,001
Paul T. Ito	23	25.51	7,893
A. B. Pagala	28	25.44	9,525
L. C. Kreim	20	25.44	7,199
Johnson & Kellogg	43	25.42	7,590
Joe G. Fanucchi	28	25.40	7,203
H. C. Russell	62	25.35	7,803
Elroy Gomez	38	25.32	7,895
West Coast Grape Farms	21	25.32	7,525
Derby Farms	26	25.32	5,413
Redfern Ranches	84	25.30	8,091
Anthony Machado	55	25.19	5,612
Caminata & Podesta Co.	15	25.14	6,984

DISTRICT 3, WOODLAND

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Oji Bros., Uno & Terao	11	44.44	13,527
Manuel Antone	3	38.10	11,415
Louis Parella & Sons	100	35.06	10,434
Mas Oji	18	34.40	10,017
K. N. Matlick	10	32.62	8,657
Gail E. Oliver	22	32.00	8,032
Dela Torres Bros.	33	31.77	8,247
Stanley Rooney	18	30.58	9,578
Calif. Packing Co.	64	30.56	9,192
W. K. Lowe	91	30.55	8,902
M. Anchita	63	30.39	10,345
Charles A. Giguiere	50	30.39	8,825
Van Smith	32	30.11	9,460
Richard Moore	124	30.03	8,444
William A. McDonald	62	29.98	10,007
Ralph W. Pollock	64	29.84	9,143
C. Bruce Mace Ranch	254	29.66	8,133
Herota Bros.	82	29.62	7,950
Erle E. Santens	25	29.54	8,956
Santens & Rued	59	29.48	8,938
Joe Giger, Jr.	29	29.47	7,297
Albert E. Tandy	27	29.46	9,109
Gill & Hull	110	29.31	8,254
Erle E. Santens	30	28.93	9,160
Orth Bros.	56	28.86	7,798
Thorley & Owyang	120	28.70	8,696
F. Erdman	30	28.63	8,022
John E. Jackson	11	28.49	7,453
Henry M. Oji	55	28.42	8,566
Frates & Shimada	85	28.42	6,974
Elwood M. Olson	47	28.24	8,393
Shigaki Bros.	141	28.18	9,220
David J. Wilson	17	28.13	8,388
C. H. Parella	17	28.01	8,935
Elwood M. Olson	72	27.93	8,262
S. Yamamoto	5	27.89	7,865
Max & Carl Storz	24	27.83	7,497
Dodge Bros.	17	27.70	8,210
H. M. Wilber	33	27.66	7,905
William B. Schoeningh	24	27.62	7,463
Joe & Manuel Bastiao	12	27.61	7,145
Thorley & Daley	30	27.55	8,436
S. Yamamoto	6	27.43	7,609
Floyd E. Warner	16	27.41	7,976
Wetzel Bros.	153	27.28	7,698
Joseph W. Machado	34	27.12	7,019
Johnston Bros.	25	27.00	7,636
Arthur N. Oji	169	26.98	8,056
R. E. Hoagland	19	26.88	7,930
H. E. & Donald Helms	13	26.81	9,410
Liberty Farms Co., Inc.	32	26.79	9,553
L. Knight Co.	23	26.62	7,198
Meek & LeMaitre	37	26.57	7,620
Fred H. Rehrman	74	26.55	8,708
M. Romani	56	26.54	8,854
Frank Giannoni & Son	51	26.51	9,650
Edwin M. Ullrich	63	26.51	7,820
Fred E. Rominger	15	26.50	6,922
B. F. Wynne	38	26.45	7,014
Meek & LeMaitre	75	26.30	8,453
Paul W. Reiff	74	26.26	8,225
Van Smith	111	26.20	8,221
Dela Torres Bros.	62	26.07	7,492
Jack Silva	77	25.99	8,296
Arnold Collier	24	25.94	7,818
C. Whealey	64	25.86	8,172
Wilbert Rosa	53	25.79	7,649
Arnold Collier	67	25.77	6,180
Meek & LeMaitre	56	25.72	8,256
Ellard J. Vierra	36	25.70	8,065
Dela Torres Bros.	37	25.67	8,014
H. J. Erickson	34	25.66	8,991
A. J. Morris	19	25.66	8,339
Schneider Frick & Schneider	28	25.62	7,184
Joe & Manuel Bastiao	39	25.55	6,760
Erle E. Santens	196	25.53	7,179
R. M. Farnsworth	150	25.44	7,205
Malcolm Farms	127	25.42	8,775
M. Barandas	41	25.41	6,058
George M. Struve & Son	225	25.31	8,747
Heidrick Farms, Inc.	68	25.29	6,747
Calif. Packing Co.	72	25.10	7,284
Wallace Bros.	89	25.04	7,472

ADVANTAGES OF EARLY HARVEST IN THE SALINAS VALLEY

By WALTER BUCKINGHAM
District Manager, Spreckels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NOW IS THE TIME when every grower is faced with making the decision of when to harvest his crop of sugar beets.

The growers in District 1 have been fortunate this year in having climate conditions which have allowed them to plant early. Conditions have also been ideal for maximum growth. It may be of interest that the prospect for a large crop is considered excellent in all areas of District 1.

Inasmuch as the first sampling was taken on July 8 and 9, and the second sampling on July 22 and 23, many growers now have the results of this sampling. If the results of these samplings produced satisfactory sugar percentages, it will undoubtedly prove beneficial to consider early harvest.

Growers may ask the question, "What are the advantages of an early harvest?"

The advantages are numerous—here are some of them:

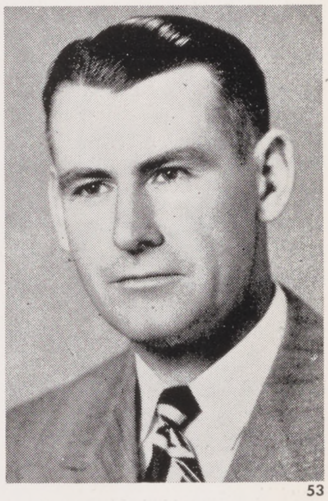
1. Harvest can be completed within a non-restricted harvest period.
2. Land will be available to prepare for the next crop.
3. You may save one or two irrigations, with their additional costs.
4. The threat of adverse weather conditions will not be a factor.
5. The supply of harvesting equipment and man power will be more readily available.

It may be of interest to note that in plotting the curve for weekly sugar percentages during harvest for each year in the Salinas Valley, the highest sugars are obtained during the early part of harvest. This is another factor in favor of an early harvest.

Present plans call for starting harvest on August 5, 1957, in District 1. It is hoped that all growers who planted early and have accepted sugar percentages on their field samples will take advantage of harvesting their sugar beets starting August 5. We urge that you maintain close contact with your field superintendent. Two heads are better than one, and he can help you materially in deciding the best time for harvest under your own special conditions.

ADVANTAGES OF EARLY HARVEST IN THE SAN JOAQUIN VALLEY

By RALPH LAMBDIN
District Manager, Manteca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THE FARMING AREA designated as District 2 by the Spreckels Sugar Company, comprises the acreage of beets planted at intervals over a 250 mile distance from Walnut Grove to Bakersfield, with an additional small acreage planted in the Fallon, Nevada district. Planting and harvesting of this acreage may take place during any part of a nine month period. However, the bulk of the tonnage produced will be harvested during August, September, October and November.

In discussing early harvest in a widespread district such as this, with the many complications and variables that are a part of it, it seems advisable to consider "early" as it applies to you as an individual grower. Being an early starter in your particular area many times will assist you and your neighbors to maintain an orderly harvest, making full and efficient use of all available machinery and man power.

Another important factor in conducting a satisfactory harvest over a large area is proper planning and coordinating of all activities. Your field superintendent is capable of answering most of the questions concerning your specific harvest.

Be sure and discuss your harvest plans with your field superintendent well in advance of harvest. He can advise you of the quota system; of the proper timing of irrigation in order to secure maximum production; disease problems; and many other phases of a large and complex harvest that you individually must take part in.

It is not the purpose of this discussion to recommend that *all* growers in the San Joaquin Valley should complete their harvest early in the season. Such a situation would be as disastrous as if every grower were to harvest in mid-season or in late season. The purpose is rather to point out that an orderly harvest for a district as large as this can be accomplished only if each grower times his harvest to coincide with a *majority* of favorable conditions, such as maturity of the crop, availability of harvesting facilities, minimum water costs, weed and disease conditions, etc.

By carefully considering *all* the factors which determine the best time to harvest, it is entirely possible that you may find it to your distinct advantage to be "in at the kickoff"—in other words—to start harvest during the first or second week in August.

ADVANTAGES OF EARLY HARVEST IN THE SACRAMENTO VALLEY

By HARRY VENNING
District Manager, Woodland

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ANY PROPERLY planned program of operations returns values not found in haphazard plans made too late and on the spur of the moment.

This applies to land leasing, land preparations, planting, irrigation, and—of interest at the moment — harvest. Harvest is, of course, somewhat dependent on the prior mentioned operations, and is a link in the chain of the grower's over-all plan.

Receiving full economic value of land, equipment, and man power is the goal to be achieved, and comes only with an early analysis of what you have to do, what you have to do it with, and most importantly, when.

Now to look at our immediate part of the plan—the harvest of the 1957 sugar beet crop in the Woodland and surrounding areas. Harvest should be underway by August 5 at the latest. It would appear reasonable to deliver beets for a full month and possibly longer with no delivery restrictions.

On this basis, the grower may plan to harvest any portion of his crop during this period, leaving a balance for fall quota period or spring harvest as he may desire. His field superintendent is available to discuss the general harvest picture and keep him informed of any changing conditions. The field superintendent is willing to take extra field samples to determine the proper place to commence harvest and to check other areas as harvest is in progress. He will also work out the pooling of acreage with other growers to make for a more efficient harvesting unit.

The planning to be done at the time of this writing (early July) involves irrigation timing to allow for the drying down of sufficient acreage to start a month hence. This will give proper soil working conditions for mechanical digging and make for better sugar content. The next move is the checking of harvesters and trucks for complete readiness so that no costly delays are encountered after the operation has begun. In the case of custom harvesting and/or hauling, the grower should have definite commitments as to time schedules, making sure to his own satisfaction that the harvesting contractor is properly equipped with all machinery and operators ready to go.

An early start on harvest produces some diversification for the grower in that it spreads the risk of unusual weather conditions and allows for the moving up of the planting cycle. The early completion of harvest makes possible early fall land preparation, and early planting for the following season.

Some growers have planned their harvest to miss the September-October quota period entirely by harvesting one-third of their beets in August and early September, one-third in November during the piling period and the final one-third during the spring campaign. Their idea is to operate only during these periods in order to get a full day's use from equipment and labor.

Other crop operations and their peak attention requirements need to be worked into any over-all farming operation, with the month of August and part of September quite often being the ideal period to get sugar beet harvest partly out of the way.

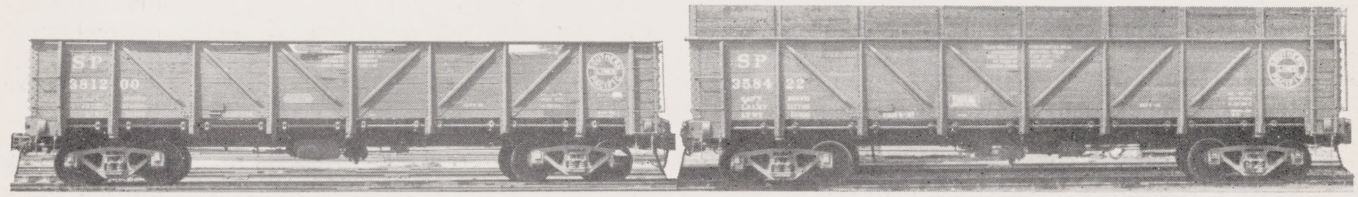
The grower who makes a pre-planned operational program and then sticks to it should also study his results from past years and bring them into consideration when making plans for future years.

NEW RAIL CARS HOLD MORE BEETS

THE SOUTHERN PACIFIC COMPANY has effectively enlarged its beet hauling capacity by the simple expedient of adding side-boards to standard gondola cars.

Mr. Charles Taggart of SP's Sacramento Division states that the new side-boards have increased the capacity of composite wood-steel gondolas from 1874 cubic feet to 2625 cubic feet. To date, 615 cars with side boards have been placed in service. According to Mr. Taggart, this is the equivalent of 200 additional cars in terms of overall beet hauling capacity for the Southern Pacific system.

Wherever necessary, Spreckels receiving stations have been adjusted to load into the new, higher cars. In this way, Spreckels growers can take full advantage of the improved cars, with no sacrifice in either loading time or accuracy of sampling.



Southern Pacific Co. Photos

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THE STANDARD gondola has a capacity of forty tons of sugar beets.

THE HIGH SIDE-BOARD gondola has a capacity of forty-eight tons.

SPRECKELS SUGAR CARTONS WIN CERTIFICATE OF EXCELLENCE

THE SPRECKELS SUGAR boxes recently designed by Walter Landor & Associates have been awarded a Certificate of Excellence by the American Institute of Graphic Arts in their 1957 "Fifty Packages of the Year" Exhibit.

This exhibit was selected from thousands of entries of folding cartons from all parts of the United States, marketed after August 31, 1955.

The AIGA show opened in New York on June 4 at the Wendell Wilkie Memorial Building, Freedom House, and will appear later in San Francisco and other parts of the country.

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SPRECKELS SUGAR boxes, introduced early in 1956, are now familiar to all shoppers. Their outstanding design won a Certificate of Excellence from the American Institute of Graphic Arts.

BEET TOPS

(Continued from Page 27)

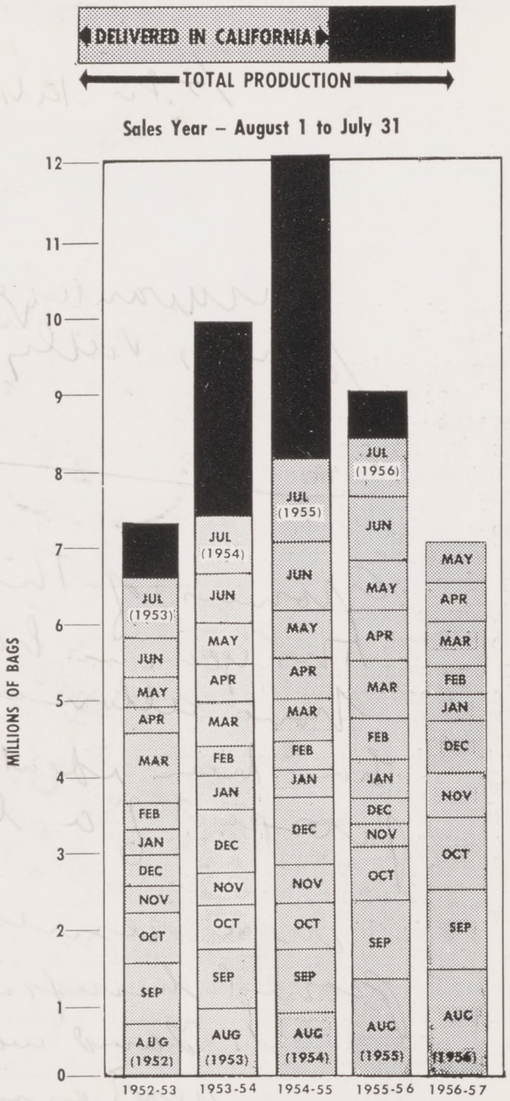
On July 3rd, 1957, the same clam shell bucket loaded out the cured ensilage into Crose self-unloading trucks. These trucks hauled the ensilage a distance of approximately 8 miles to the dairy ranch of Mr. Nelson Santos. Perhaps the remainder of the account is best described by quoting from a letter which Mr. Santos wrote to California Harvest Machinery, Inc. at Tracy.

"On July 3rd we started a beet top ensilage feeding program on my dairy ranch, which is located on Highway 50, eight miles west of Tracy, California. We are milking 320 cows at present.

"During the past 10 days we have fed 6 tons of beet top ensilage per day, or 37½ lbs. per head per day. The herd has increased production 130 gallons per day and still is increasing. This increase was made even though we have stopped feeding green pasture since starting the beet top ensilage program.

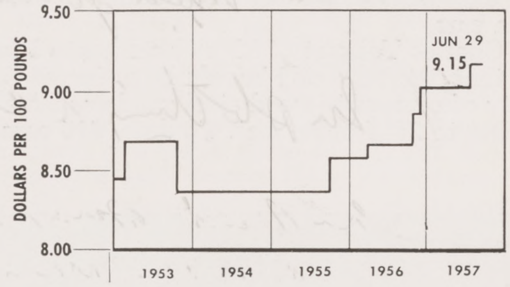
"Previously I have fed other types of ensilage and wet beet pulp but never have had my herd do so well as it is doing on beet top ensilage. Also, we have found that this feeding program has in no way affected the flavor of the milk."

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The **SPRECKELS SUGAR BEET BULLETIN** is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, Editor SPRECKELS SUGAR COMPANY WOODLAND, CALIFORNIA

OCT 8 '57

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 21 SEPTEMBER-OCTOBER, 1957 NO. 5

1 POUND
net weight
SPRECKELS
SUGAR
SPRECKELS
SUGAR
NEW! Fluffier! Finer! Makes
easy-to-use
STAY-SOFT
package
Helps keep sugar fresh and fluffy. When you don't use it all, just fold the inner liner down and tuck in the flap
CONFECTIONERS
powdered
CONFECTIONERS
powdered
WITH 3% CORNSTARCH
SPRECKELS SUGAR COMPANY • SAN FRANCISCO

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WE CELEBRATE A BIRTHDAY

— Our 60th. Claus Spreckels founded the Spreckels Sugar Company in 1897. The company has grown from one factory to three, at

SPRECKELS
MANTECA
WOODLAND

— and land has been purchased for a fourth at Mendota. Some of the incidents of this dramatic growth are told on pages 34 and 35.

60 YEARS OF PROGRESS IN SUGAR BEET AGRICULTURE

By AUSTIN ARMER
Agricultural Engineer, Spreckels Sugar Company

THE PRESENT day-by-day activities of the agricultural department of Spreckels Sugar Company give no hint of the more dramatic incidents affecting that department during the last 60 years. In this period there have been occasions when the existence of the beet sugar industry was threatened and when the department played a major part in rescuing it.

THE CURLY TOP MENACE

As early as 1899, the agricultural manager at Spreckels reported: "The blight is a very serious matter and has caused the loss this year of hundreds of thousands of dollars to beet raisers and to our factories. It is extremely important to know what it is, its source, its means of propagation, and more especially, if we may expect it again next year." The blight he was referring to was curly top, a virus disease of the sugar beet.

Indeed, the blight struck the next year and the next after that and again and again until it threatened to wipe out all the sugar beets in California.

A two-pronged attack was launched against the disease. First, the selection, testing and reproduction of plants that appeared to have withstood or survived the disease were undertaken. Second, the beet leafhopper, the insect that carries the disease, was studied and attempts were made to control this pest.

The Spreckels agricultural experiment station at the Spreckels factory became a center of activity for the work in selecting and breeding. At the same time, the U. S. Department of Agriculture and the University of California also initiated a similar program. A great deal of the selecting work was done in the King City area and it is more than probable that the first curly-top-resistant varieties of beet seed were descended from plants selected and tested by the workers in that area. At any rate, the patience of these men and women was rewarded. The varieties that resulted from their work displayed a satisfactory degree of resistance to the virus and were a major factor in the recovery of the beet sugar industry. This work has continued, and present curly-top-resistant varieties will tolerate the disease to a much greater degree than the first resistant varieties did.

One consequence of the development of curly-top-resistant seed was the establishment, for the first time, of beet seed production in this country, freeing the domestic beet sugar industry from dependence on Europe for its seed.

The second prong of the attack on curly top met with equal success. A major share of the credit for the control of the beet leafhopper goes to E. A. Schwing, entomologist for Spreckels Sugar Company from 1919 until his death in 1951. Mr. Schwing knew the foothills of the west side of the San Joaquin Valley like the palm of his hand and it is in this area that the insect (*Circulifer tenellus*, to give it its scientific name) spends the winter and breeds. In the late spring and early summer it leaves the breeding grounds and, depending upon prevailing winds, migrates to one or more of northern California's agricultural areas. Under Schwing's direction, a program to kill the insect and destroy its food source at the breeding grounds was adopted. This work, carried on by Spreckels at first, later became a cooperative program of the California processors and was eventually taken over by the state. Every year countless acres of arid foothills are sprayed and hoed to eradicate the beet leafhopper and its food. Since the curly top virus attacks tomatoes, melons and other crops as well as beets, the importance of this control program reaches far beyond the beet sugar industry.

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Claus Spreckels — 1828-1908

From an oil painting by Toby Rosenthal, 1879

THE SPRECKELS SUGAR COMPANY marks the 60th anniversary of its founding in 1897—the corporate creation of Claus Spreckels.

In 1856 Claus Spreckels came to San Francisco with his wife, Anna, and infant son, John. Successively a grocer, a brewer and a refiner of cane sugar, he built California's second successful beet sugar factory at Watsonville in 1887, which operated through 1904.

After starting construction of his second factory, at Spreckels, near Salinas, he organized the Spreckels Sugar Company on August 6, 1897. Two more factories were built—Manteca in 1917 and Woodland in 1937. A fourth factory is on the drawing board, for eventual erection on a site purchased near Mendota.

AGRICULTURAL MECHANIZATION

World War II brought a crisis to the beet sugar industry in the form of an acute shortage of field labor. Almost overnight the workers who were relied on to harvest California's sugar beet crops vanished from the fields.

In the years preceding 1941 many efforts had been made to design a satisfactory sugar-beet-harvesting machine. None of these machines was commercially successful, though. Then in 1938 the University of California embarked on a program of basic research in the development of sugar-beet-harvesting machinery. It was supported financially by the beet sugar processors of the western United States.

This program was fortuitously timed. It began to bear fruit in 1942 just as the war-caused labor shortage became critical. In August of 1943 Spreckels Sugar Company established a policy of encouraging growers to harvest their beets mechanically by actually providing them with machinery for doing the job, together with technical advice and training for the operators of these machines.

Carrying out this program to its ultimate success of 100-percent machine harvest required the combined efforts of the company, the manufacturer, the university and a handful of determined growers. Had not these few growers believed in the merits of mechanical harvest, the technique of proper machine operation would have taken much longer to acquire. Once mechanical harvest became accepted practice for these few progressive growers, only a relatively short period elapsed before it became universal in the state.

Work in mechanization is continuing. The present emphasis is on developing and refining equipment and techniques for machine thinning of the crop. Spreckels's agricultural organization is working with interested growers, manufacturers and university extension personnel toward a goal of freeing sugar beet growers of the problems and expense of hand labor.

CURRENT RESEARCH PROJECTS

Agricultural research never stops. While the industry may not at this moment be faced with critical problems, it is beset with innumerable smaller problems, all of which add up to the need for aggressive agricultural research.

Dr. Russell T. Johnson heads the company's agricultural research program. His basic work is a seed-breeding program. This program has already had successful results. New seed varieties, like S-1, S-2, S-3, S-4 and S-5, have specific characteristics tailored to the requirements of the various beet growing areas in which Spreckels Sugar Company contracts. Improvements in over-all yields are testimonials to the success of the company's seed-breeding work.

In addition to this, there are other research projects. Some of these are:

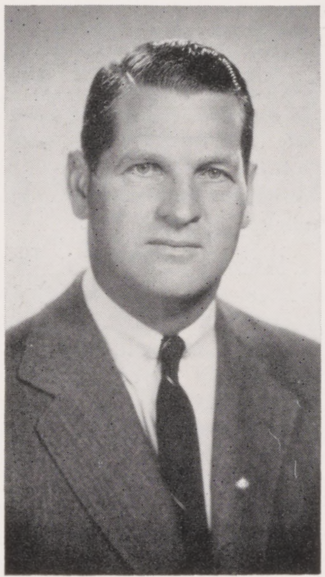
1. Disease and pest research, including virus yellows, downey mildew, leaf spot, seedling diseases and nematode.
2. Weed control by both chemical and mechanical means.
3. Fertility levels and growth studies.
4. Planting and harvest dates.
5. **Rotation** and other cultural practices.

The company makes every effort to assist and cooperate with other research groups that are striving to develop better beets produced at lower cost.

A NEW FACTORY IN SPRECKELS' FUTURE

By CHARLES de BRETTEVILLE

President, Spreckels Sugar Company



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A STRIKING FACT about the Spreckels Sugar Company's history is that it has built a new factory about every 20 years. When the company was incorporated in 1897 work on the Spreckels factory had been in progress for almost a year. Twenty years later in 1917 construction of the Manteca factory began. And in 1937 the Woodland factory was completed and had its first campaign.

Where does 1957 find us? Not with a new factory, as you know (although the capital improvements made at our three factories during the last 10 years have resulted in as great an increase in productive capacity as a new factory would have provided). But we have recently purchased 1600 acres of land near the town of Mendota, which lies about 30 miles west of Fresno. Here we hope to build a fourth factory some day.

OUR GROWING MARKET FOR SUGAR

The six western states—Spreckel's primary market—have grown spectacularly in population since the beginning of World War II. In 1940, 10,978,000 people lived in California, Oregon, Washington, Nevada, Arizona and New Mexico. By 1956 this figure had increased to 20,160,000 — more than 80 per cent growth in 16 years. Everything points to continued population growth in this area. The estimated population in these states in 1962, is 24,190,000 or almost 20 percent more than it is at present.

When you consider that per-capita sugar consumption remains fairly constant at about 100 pounds a year, you can appreciate that our primary market should be an expanding one in the future as it has been in the past. Thus we will need, in due course, increased factory capacity if we are to produce enough sugar to maintain our share of the sugar business in this market. This, then, is one reason for our purchase of the Mendota site.

NEEDED: PLENTY OF SUGAR BEETS

The other reason is an expected abundance of sugar beet production in the southern San Joaquin Valley.

As I hardly need remind you, in the past sugar beets have not always been as financially attractive as other crops. As a result, there have been ups and downs in the production of beets from year to year.

We have had to take into account, therefore, the problem of getting consistently adequate supplies of sugar beets in our consideration of building a new factory.

After very careful study it was determined that the southern San Joaquin Valley had as good potential as any area of California for increased sugar beet production. It has a vast amount of good land (much of it still undeveloped), and this land is suitable for sugar beets. Growers there seem to be keenly interested in this crop since it fits in well with their rotation programs. Members of the agricultural and operating departments examined the area very closely and finally recommended Mendota as the best site.

A NEW FACTORY — WHEN?

Just when we can build a factory at Mendota remains to be seen. In accordance with the provisions of the Sugar Act, both the volume of sugar Spreckels and other beet-sugar processors can sell and the amount of sugar beet acreage you can plant are currently restricted by the Department of Agriculture, as they have been for the past few years. Of course as the country's population increases the Department should permit a gradual increase in beet sugar consumption and sugar-beet plantings. But there will have to be a sharp rise in both before we can justify the large investment required for the construction of a new factory. Thus our new factory may be a number of years away.

It is against the day that we want and need this factory that we have purchased the Mendota site.

SALES CONFERENCE CELEBRATES SPRECKELS SIXTIETH ANNIVERSARY

"GUIDED EFFORTS" was the theme of the recent three-day meeting of the Spreckels Sugar Company sales department, sales representatives, and brokers in Palo Alto. In addition to celebrating Spreckels Sugar Company's 60th anniversary, this meeting was designed to give sales personnel a complete picture of the industry . . . the company . . . and its sales advertising program.

Highlights of the convention, included a tour of the Spreckels Sugar Company's factory at Spreckels, California . . . a talk by William H. Ottey, vice president, on the structure of world and domestic sugar prices . . . a sales clinic . . . and a conference session devoted to advertising and merchandising.

All Western brokers for Spreckels Sugar were represented at the conference. It is interesting to note these organizations average 34 years of representation of our brand. Their names, in the order of length of service for Spreckels—

Kelley-Clarke Company, Portland, Oregon
Jules Carlin Company, El Paso, Texas
D. J. Shrecengost Company, Roswell, New Mexico
Kelley-Clarke Company, San Francisco, California
Co-Sales Company, Arizona
J. B. Lynn Company, Sacramento, California
M. L. Murdock Company, Albuquerque, N. M.
F. F. Hearold Company, San Diego, California

Allen's Photo Supply

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Present at the recent western sales conference were, L to R: D. F. Leary, Advertising Manager—J. C. Spencer, Account Executive, BBDO— C. J. Hawksley, Manager Individual Services Dept.—R. A. Rupe, Kelley-Clarke Company, Portland, Ore.—C. A. Heimbigner, District Manager, Seattle—D. E. Spencer, Market Analyst—F. F. Hearold, San Diego Broker—Chas. H. Dissmore, District Manager, Los Angeles—P. J. Kelley, San Francisco Broker—J. B. Lynn, Sacramento Broker—B. Van Steenwyk, Arizona Broker—C. J. Schuepbach, Assistant Sales Manager—W. H. Ottey, Vice President, and C. F. Johnson, Sales Manager.

Brokers not present in this group: Jules Carlin, El Paso Broker—Martin Murdock, Albuquerque Broker, and D. J. Schrecengost, Roswell, New Mexico Broker.

These and Many Other Grocers . . . Push Spreckels Sugar . . . With Sales-Making Displays!

ROY'S MARKET
San Diego, California
Deane Payne, Sales Representative

LAUREL SUPER MARKET
San Francisco, California
Vince Nicolai, Owner
H. A. Moreau, Sales Representative

WOODYARD BROS.
Portland, Oregon
Tommy Woodyard, Owner
Duncan Strang, Sales Representative

KEETON'S SAVE WAY MARKET
Phoenix, Arizona
Chas. Atkerson, Manager
L. D. Reed, Sales Representative

RALPH'S
La Canada, California
Raymond Sheehan, Manager
J. C. Reynolds, Sales Representative

STOP N' SHOP NO. 8
Sacramento, California
Al Gallo, Manager
Joe Pettus, Sales Representative

NIC'S PIC & PAYIT GROCERY
Seattle, Washington
Gerald Horn, Manager
Dave Hanberg, Sales Representative

BAYSIDE CENTER MARKET
San Leandro, California
H. P. "Whitey" White, Manager
George MacMahon, Sales Representative

FOOD BANK NO. 4
Fresno, California
Bill Barnhard, Sales Representative

SUCH SWEET THINGS HAPPEN WITH SPRECKELS SUGAR

. . . like these candied apple kids!

And the new twist for this all-time favorite is a paper napkin, knotted western-style, for the boy . . . a paper doily "collar" for the girl. (You avoid sticky hands this way, too!)

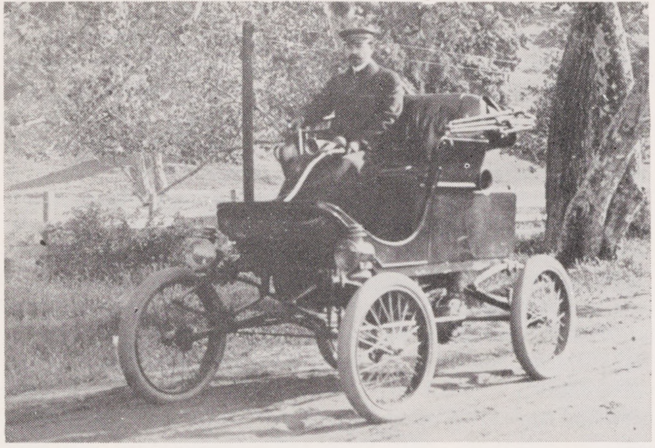
Send for this and other "Funny Face" recipes . . . Spreckels Sugar Company, No. 2 Pine Street, San Francisco, Calif. See how *many* sweet things happen when you team up with Spreckels Granulated Sugar!

Look for the bright, new bags of Spreckels Granulated Sugar . . . in thrifty 2, 5, 10 and 25-lb. sizes!

WESTERNERS ARE SWEET ON SPRECKELS SUGAR

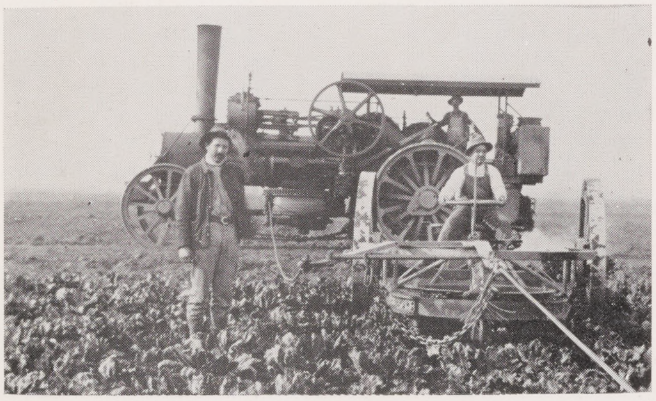
This Advertisement Appears in October *Sunset* Magazine

60 Years Ago



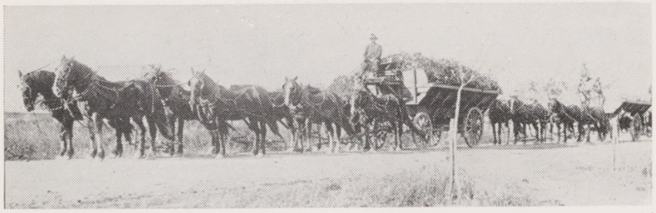
Photographer Unknown 62

B. F. ARENDT was the first superintendent of the original Spreckels factory. Can anyone identify the make of his electric runabout?



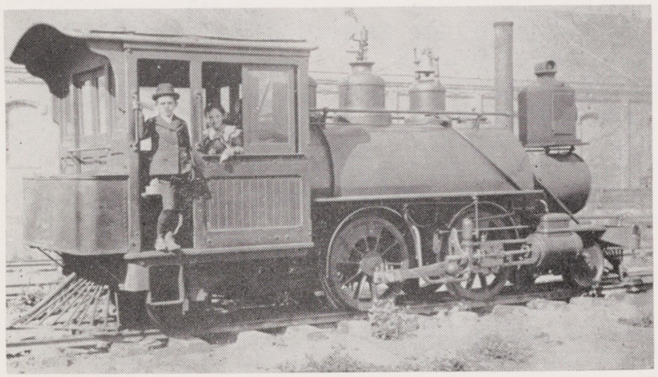
Photographer Unknown 63

STEAM PLOWS were an innovation in 1897. Two "Winding Engines" pulled this beet lifter back and forth across the field by steel cables.



Photographer Unknown 64

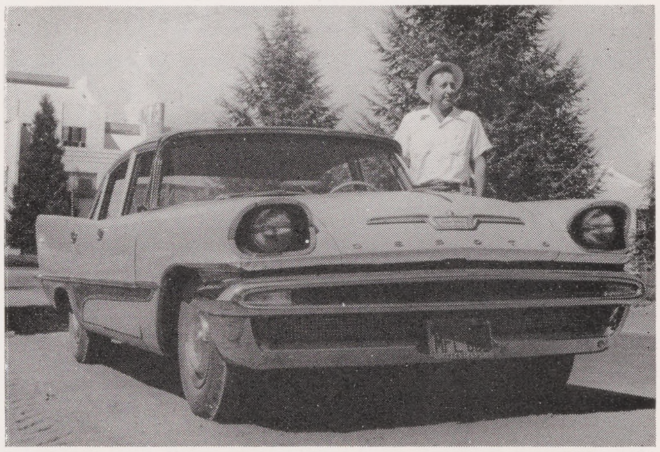
HORSES and wagons were the standard transport method for beets of the 90s.



Photographer Unknown 65

ROSE and **WILLIAM RHYNER, JR.** were the children of William Rhyner, Sr.—construction superintendent, Spreckels Factory, 1897.

- - And Now



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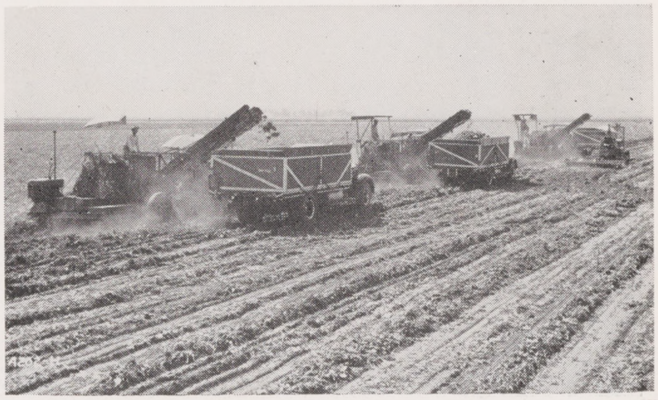
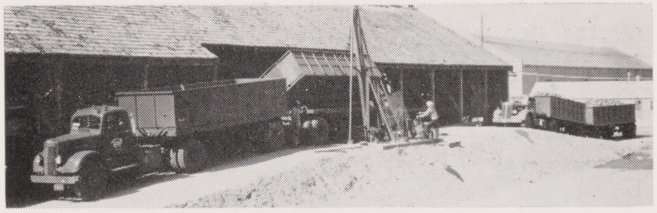
DON HEFNER, Agricultural Superintendent at Woodland, with his 1957 model, shows that styles have changed—for both cars and drivers.



Cal Williams Photo 67

THREE MARBEET HARVESTERS do the work of 100 men topping and loading beets loosened by the old steam plow.



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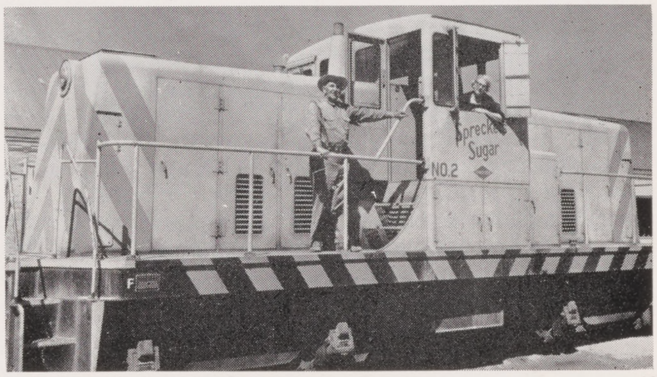
DIESEL TRANSPORT trucks each haul (in one day) over 50 times the beet tons hauled by 8 horses.



T. B. Green Photo 69

ROSE and **WILLIAM RHYNER, JR.** appear again in 1957, after their retirement from their careers with Spreckels Sugar Company.

NEW RECEIVING STATION TO SERVE SPRECKELS GROWERS

ONE OF THE OBLIGATIONS of the Spreckels Sugar Company Agricultural Department is to maintain modern beet receiving facilities. This is a never-ending task, because improvements in transport methods make it necessary to keep abreast of technological changes by continually modernizing or replacing receiving stations.

An example of this policy in action is the new station completed at Catlett in time for the 1957 fall harvest. In the case of Catlett, the floods of 1955-1956 damaged the old receiving station to such an extent that it became a choice between repairing it or replacing it, and the latter course was chosen. All of the old equipment was completely dismantled; the ground levelled and excavated for a new scale pit and a new hopper pit. Substantial concrete foundations were poured, and an entire new structure erected.

Features of the new receiving station include a 26 foot hopper capable of receiving the largest grower's beet truck; a new three-story combination tare house, lubrication station and electrical load center; a more thorough cleaning screen; and finally, a transverse shuttle belt designed to direct the beets either to railroad cars or to transport trucks.

The modernization of receiving stations as exemplified by the new installation at Catlett not only accommodates the larger trucks coming into use by beet growers, but significantly increases the rate at which beets can be received. Improvements such as hydraulic truck hoists and large receiving hoppers with rapid delivery belts all add up to a much larger investment in first cost and operating power requirements, but they also have the double advantage of accommodating the new equipment and of very greatly increasing the daily capacity of each station.

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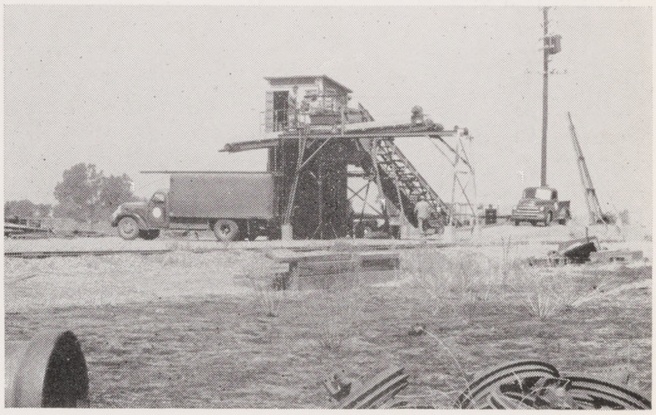
THE FLOOD of 1955-56 left the Catlett receiving station beyond repair.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THE NEW receiving station at Catlett nearing completion on September 9, 1957.

NEW 4H PROGRAM SHOWS PROGRESS

By S. L. STOVALL

Livestock Specialist, Spreckels Sugar Company

SOMETHING NEW is being done this year in California's 4H Clubs, and Spreckels is proud to have a part in it. This "something new" is a special twist that aims at making the growing of field crops an important part of 4H clubbing. In the past there have been many instances of 4H Club youngsters taking on the task of a garden project or a more ambitious commercial planting of some field crop. At times sugar beets have been grown in these projects. Such activities, however, were limited to the youngsters who had the land available for such an extensive program. This, of course, left out a large number of members. It also limited this activity to the older boys. Another big stumbling block to field crop projects is that these programs required considerable sweat and toil.

Recognizing these limiting factors, several people from Spreckels sat down with members of the University of California Agricultural Extension Service to discuss field crops—sugar beets in particular—as a 4H project. Out of this meeting came an approach which calls upon the Sugar Company fieldmen to act as project leaders for the program. A year's program was planned that called for each member to learn through doing the various fundamentals of field crop culture. Each youngster is to grow a twenty-foot row of beets. Before he plants or thins or harvests his beets, he will see the operation as it is performed in commercial plantings. In addition to these field trips, the members are taken on a visit of a seed processing station and at the conclusion of the program on a tour of a sugar factory.

This idea of drawing upon the experience of sugar company fieldmen in leading this club appears to have been successful, and though this is only a beginning, it indicates that such an activity can be expected to pay off in creating interest in row crop farming, which is what most of them who enter agriculture are going to do. It has also furnished some real satisfaction to those who have been a part of the program. It's a fine experience to show a youngster what magic can be performed through the miracle of a seed, soil and water; or to quote the title of the Extension Service booklet—"Sugar Beet Magic."

Photographs on Page 40

ANOTHER COASTAL VALLEY DAM

THE SELF-RELIANCE that is traditional with California farmers again expressed itself when the citizens of San Benito County voted a bond issue to pay for a dam on the San Benito River in the Hernandez Valley.

While the San Benito Valley is included in the ultimate development of the California Water Plan, it is one of the areas which has to have water now—it can't wait for state-wide development in the indefinite future. This situation was well illustrated when the citizens of the Salinas Valley voted the bond issue which financed the Nacimiento Dam.

The Hernandez Dam has another similarity to the Nacimiento Dam—it stores water which would otherwise waste to the ocean in winter floods, and permits this water to percolate into the natural underground reservoir of the San Benito Valley.

Mr. Millard Hoyle, editor of the Hollister Free Lance and a vigorous campaigner for the Hernandez project, has said, "The Hernandez Dam may not be the ultimate solution to all of the long range water problems of the entire county. But it is the only practical and immediate solution that is in reach. Schemes to import water from outside sources are many years away at best, and the imported water would be too high in price."

WHAT HERNANDEZ DAM WILL DO

The dam will be built in the Hernandez Valley about 50 miles upstream from Hollister on the San Benito River. Following the pattern of the Nacimiento Dam, it will be an earth fill with a rock face. It will be 900 feet wide at the crest and 100 feet high. The dam will impound a lake two and one-half miles long and containing 18,000 acre feet of water when full.

When in operation, the Hernandez Dam will impound water during the winter months, during which rainfall and runoff are at a maximum. Then during the late spring and summer, water will be released from the dam to flow through the natural channel of the San Benito River until it reaches a point near the Bruce Hill Ranch in the Mulberry district, where it will be transported by ditch to the Paicines reservoir, which will be enlarged from its present size to accommodate a total volume of 5,500 acre feet of water.

Water will be permitted to percolate into the San Benito River bed below Paicines reservoir whenever the water table in the San Benito Valley indicates overdraft which can be corrected by percolation. To maximize the usefulness of this percolated water, a series of check dams will be bulldozed each year along the San Benito River bed. In addition, some water from the Paicines reservoir will be carried to Tres Pinos Creek, which is a tributary to the San Benito River.

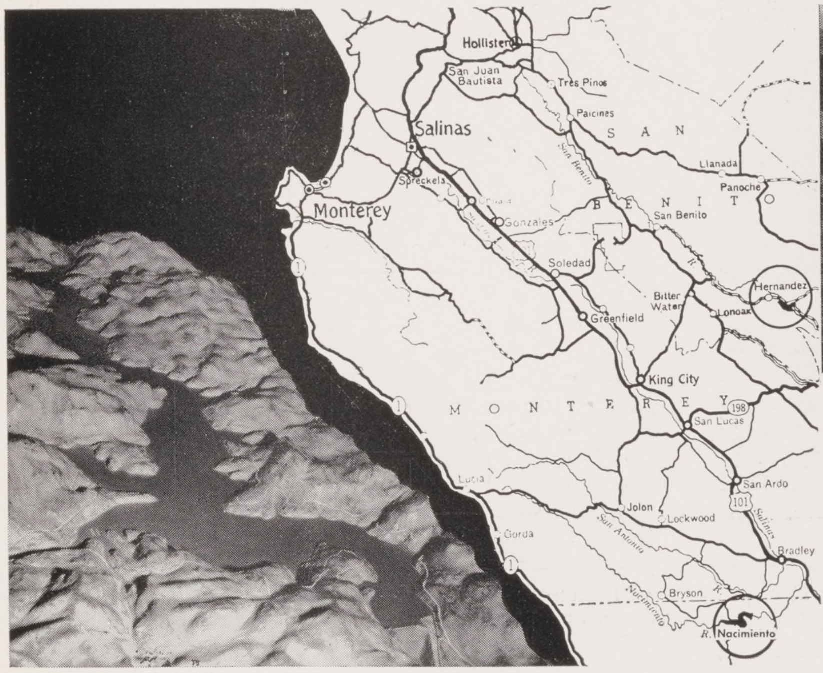
Thus when the Hernandez-Paicines percolating system is in operation, the present overdraft of the underground reservoir of the San Benito Valley will be relieved to the extent of 8,500 acre feet each year.

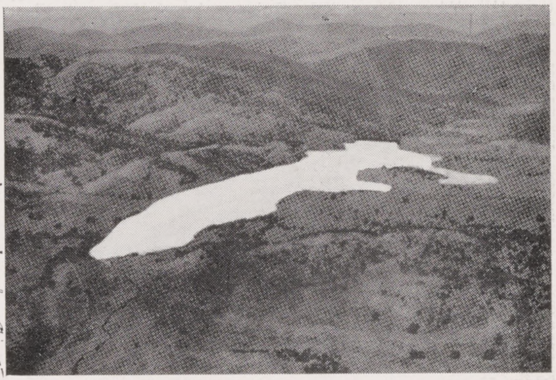
It is worthy of note that whereas structures such as the Hernandez Dam are an immediate answer to an immediate problem, they also fit in admirably with the long-range California Water Plan.

Correction

On page 27 of the July-August issue (last paragraph) the Hansen and Barkley acreage was given as 90 acres.

The correct figure is 42 acres, which represents a yield of 14.3 tons of green tops per acre, and not 6.7 tons as stated.





Hollister Free Lance Photo 72

HERNANDEZ DAM (artist's concept above) will serve the San Benito Valley in much the same manner as the Nacimiento Dam (model on left) serves the Salinas Valley. Relative location of the two dams is indicated on the map (center).

T. B. Green Photo 73

AT SPRECKELS, the 4H sugar beet growers stand among their beets. Left to right, they are: Bryan Bost, Jill Abeloe, Robert Kitaji, Bill Pierce, Gail Abeloe and Project Leader Harold Voth.

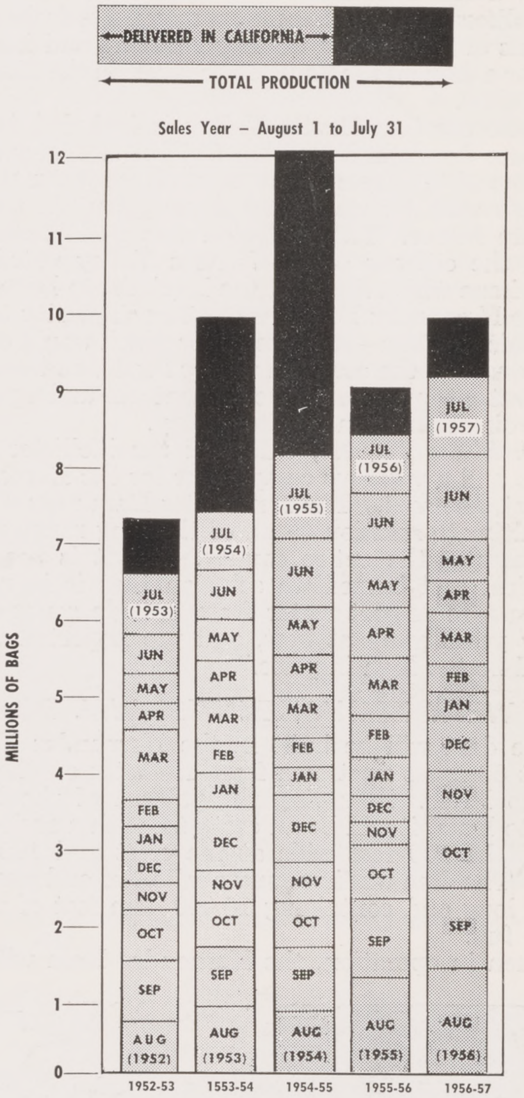
Tom Ryan Photo 74

BANTA 4H Group leader is Dick Veenendaal (with hat). Members are (l to r) Gary Imhof, Henry Tosta, Chris Castro and Allen Fistolera. Not shown are Larry Fistolera, Daniel Mello, Jerry Petz, John Borges, David Johnson and Bill Baier.

Tom Ryan Photo 75

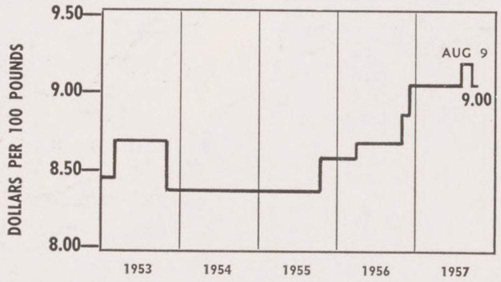
JEFFERSON 4H Group is led by Bob Hanson, a Spreckels grower. Club members are (l to r) Larry Gerhart and Leland Gerhart, grandsons of Q. L. Gerhart, who, with his son, has been a Spreckels grower for 20 years. Absent when the photo was taken were Charles Alcock, Jim Baskette and Michael Huddiman.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, Editor   SPRECKELS SUGAR COMPANY   WOODLAND, CALIFORNIA

1897 1957
SPRECKELS SUGAR
60th Anniversary

Dec 24 '57

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 21 NOVEMBER-DECEMBER, 1957 NO. 6

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NOBODY WANTS THIS

Weeds in sugar beets mean a loss of grower income.

CULTURAL PRACTICES
PLANTING DATES
HARVEST PLANNING

are factors in weed control which can be adapted to meet the special needs of each grower. See pages 42 and 43.

EARLY HARVEST, WEED CONTROL AND PROFITS

By DAN DIETER
Agricultural Superintendent
Spreckels Sugar Company

SUGAR BEET growers in the San Joaquin Valley have long been aware of the advantages of a later harvest and the gains to be derived from a combination of late harvest and the overwintering program. The usual resultant increase in total sucrose per acre has been an important incentive for the adoption of such a program by many growers.

However, there are certain times during certain years when a grower should consider the possibility of an early harvest, and anticipate it by planting early. Such an early harvest might, in an overall analysis, return more net profit per acre to the grower. Producing the maximum sugar per acre should always be a grower's goal, except when such factors as disease and bad weed conditions could actually reduce the net profit if beets were to remain in the ground for late harvest. (It is a recognized practice to strive for early harvest on diseased fields because of actual loss of tonnage by leaving beets in the ground under such conditions.) It should also be recognized that early harvest on weed-infested fields can return more profit per acre to the grower even though he may not harvest the maximum tonnage per acre.

ONE EXAMPLE

An example to be cited is the field of an East Stockton grower this year who did a commendable job in attempting to control weeds in one of his plantings. He seeded early and was one of the first in the area to thin his beets. His thinning was done by a National crew, working on an hourly basis, and supervised very closely to make certain that the proper job of thinning and hoeing was accomplished. This work was followed by two additional hoeings as well as numerous cultivations during the growing season. When this field was "laid by" around the first of August, the casual observer would have seen very few weeds and would have certainly classified the crop as a clean one. The crop could have been harvested and delivered to the factory with a minimum of dirt and trash all during the month of August.

However, because the grower elected to "go for" a higher sucrose content, harvest did not commence until the latter part of September. During the interim—from August 15 to September 30—the weed growth which had been held in check by earlier cultivations developed terrifically. Water grass which was at slightly more than the seedling stage in August developed to such an extent that by harvest time it was necessary to run a rotobeater ahead of the digger. Water grass, pig weed, and even volunteer tomato plants all contributed their share in making harvest more difficult as well as more costly for the grower. Had this harvest taken place in August, weeds would not have been a problem. The small amount of increase in sucrose content was more than offset by reduced harvester capacity and efficiency, and higher hauling costs because of more clods and dirt.

ANOTHER EXAMPLE

Last year, during the 1956 season, harvest was postponed in a field in the South San Joaquin area because of excessively bad water grass conditions. The infestation of grass was one of the worst ever observed in the area. Because of the grass condition the grower stopped his harvest operations, in this particular field, around the 10th of September. It was his reasoning that the grass would give less trouble with the harvest operations after it had been hit by a frost, and such reasoning usually proves to be true. At the time the harvest was stopped, the crop was competing with the water grass, and was making around 10 to 11 tons per acre.

Harvest operations were resumed around the 10th of November, after the grass had been frozen. The grower found that he had accomplished what he had hoped for as far as the water grass was concerned. However, he also accomplished something that he had not expected. He found that the grass had actually "choked out" the crop of beets and instead of harvesting his previous average of 10 to 11 tons, his yield dropped to a new low of 3½ tons per acre on

(Continued on Page 48)

" - - - Around the first of August, the casual observer would have seen very few weeds - - - - - the crop could have been harvested and delivered to the factory with a minimum of dirt and trash all during the month of August."

" - - - From August 15 to September 30, the weed growth which had been held in check by earlier cultivations developed terrifically. Water grass developed to such an extent that by harvest time it was necessary to run a rotobeater ahead of the digger."

Merry Christmas

SPRECKELS SUGAR COMPANY

1897 *60th Anniversary* 1957

SUCH SWEET THINGS HAPPEN WITH SPRECKELS SUGAR

... like these gingerbread "Cowboy" kids!

They're so good 'n golden when you make 'em with Spreckels Light Brown Sugar. And to be sure they're pretty as a picture, just trace these figures on cardboard, cut out and grease cardboard. Then place on rolled out dough, and cut around each figure.

Frost 'em with Spreckels Powdered Sugar (see recipe on package).

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WESTERNERS ARE SWEET ON SPRECKELS SUGAR

This Advertisement Appears in November *Sunset* Magazine

EARLY PLANTING HAS MANY VIRTUES IN INTERIOR VALLEYS

By W. J. DUFFY, JR.
Sugar Beet Grower, Woodland

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THERE ARE hundreds of thousands of acres in the Interior Valleys that are not now growing sugar beets or other crops because the texture of the soil is of such a heavy nature that good seed beds and good stands are difficult to obtain in the early spring.

I am referring to soils such as Sacramento clay loam, and soils of similar type, where the land is so flat, and the subsoils so compact that furrow irrigation is quite often impossible.

Many efforts have been made to grow sugar beets on these soils, with varying degrees of success. The crop can not readily be irrigated to establish a stand, and spring seed bed preparation leaves the land cloddy and dry near the surface. What then can be done to make this vast acreage a good producer of sugar beets? A clue to the answer may possibly be found in my experience with this type of soil, particularly in the handling of the 1957 beet crop.

I have grown beets on this type of soil many times and have always felt that if a satisfactory stand is obtained, I can produce a paying crop. This was most difficult to do in the spring, as the land usually lay wet all winter and when worked in the spring, it was cloddy and the surface moisture was gone. Rains could not be depended upon, and to irrigate to bring up the plants was impractical.

MY APPROACH

I decided to approach the problem from a different angle. I selected a parcel of land that could be expected to develop a minimum amount of winter weeds. I prepared it in late fall by disking twice, fertilizing with 40 units of nitrogen in the form of aqua ammonia and harrowing the land to form a flat seed bed.

On December 8-9-10, I planted 6½ pounds of sugar beet seed per acre at a depth of about ½ inch. This meant that the seed was in dry dirt. It did not rain until January 12th, and then the seed began to sprout. In about 25 days a satisfactory stand was in evidence. Intermittent rains throughout the winter and spring kept the beets growing. Thinning was completed about March 20th and labor was no problem, as there was very little competition for labor. The stand after thinning averaged about 130 beets per 100 feet of row. Rows were 20″ apart; thinning cost $12.00 per acre. The first hoeing cost approximately $20.00 per acre and the second hoeing about $6.00 per acre.

After thinning, a side dressing of 80 units of nitrogen was applied, making a total of 120 units of nitrogen per acre.

Irrigation was by overhead sprinkler and began late in May. By this time, the beets were about half grown, averaged more than 3″ in diameter and had fine long tap roots.

Four irrigations were applied at a cost of approximately $5.00 per acre per application and were repeated at 15 to 18 day intervals.

On August 12th, the harvest began and the sugar tests showed about 15.5%. Harvest was with a two row Marbeet harvester and seven men were used to harvest and deliver an average of 150 tons per day. The haul to the Woodland factory was 22 miles. Five trucks were used and two men operated the digger.

The yield was 23 tons of clean beets per acre and the average per cent of clean beets was 93.34%. The average sugar content was 15.55%.

The entire crop was delivered by August 31st, and all of it with unrestricted quotas. The sugar content was substantially the same throughout the harvest, indicating that the beets were mature at the start.

WHAT THIS EXPERIENCE PROVES

The significance of this practice is in its very real advantage to the grower. It enables him to start his crop early under natural conditions, when rain may be counted upon to sprout the seed and keep the soil moist enough to prevent crusting.

It permits the beets to grow throughout late winter and early spring with good growing weather. The heavy soil is warmer than sandy loam and growth is faster. Beets are well along before irrigation is necessary.

The grower has a better chance to get a good stand of beets before danger from damping off and other fungus diseases become a factor.

It permits early thinning when labor is plentiful; if a thick stand is obtained it is an inducement for mechanical thinning. It tends to produce higher sugar percentage than later planting, since the beets have plenty of time to mature.

It permits an early harvest, and the advantage of delivery to the factory without quota restrictions.

It permits 100% mechanical harvest, since ideal soil conditions can be counted on for the harvest.

It releases the land early for subsequent crops; this is quite often important from the management standpoint.

It permits wider rotation, as a satisfactory row crop can be grown on land that was normally producing grain, rice, corn, etc.

It gives the farmer early capital, often making it possible to cut down on interest costs, and provides ready cash for other fall operations.

It permits machinery and manpower to be used without interference with other fall crops such as rice, milo corn or beans, thus giving machinery and manpower a longer period of usefulness.

With ground conditions ideal, weather a reliable factor, and mechanical harvest a certainty, the case for early planting is a good one. If fall weather permits, I will endeavor to follow through with the 1958 crop in a like manner.

A SYSTEMATIC BEET TOP ENSILAGE PROGRAM

By AUSTIN ARMER

Agricultural Engineer, Spreckels Sugar Company

JOHN JACKSON grows beets for Spreckels Sugar Company a few miles north and west of the Woodland factory. For several years his farming program has included fattening steers and lambs and he is therefore conscious of the feed value of crop residues.

This year, Mr. Jackson equipped himself to do a systematic job of ensiling sugar beet tops, and his equipment and methods worked out so well that they are definitely worthy of note.

The first step in organizing the system was to select a suitable forage harvester. After a thorough study, Mr. Jackson selected the Lundell Forage Harvester, supplied by Middleton Implement Company of Woodland. In making this selection, Mr. Jackson got more for his money than a piece of machinery—he received the consulting services of the distributor which in this case were particularly valuable because they adjusted and rebuilt the machine to do this specific job of cutting and delivering sugar beet foliage. Earlier users of the Lundell Harvester complained about the bruising and crushing of the foliage, but this condition was corrected by removing the stationary cutter bar from the Lundell and permitting the standard flailing knives to whip off the beet leaves without chopping and bruising them.

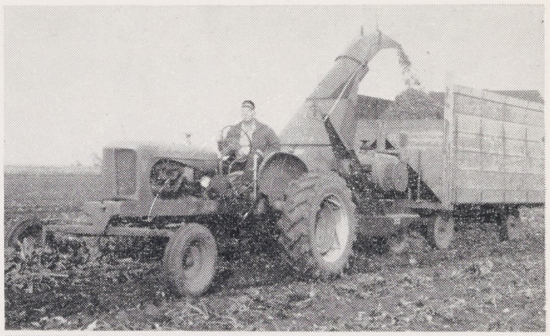
For the next step in equipping his ensilage program, Mr. Jackson had two wagon beds built by Hugo Maassen, the resourceful and ingenious blacksmith at Yolo. These beds had vee-bottoms with side doors, which made the wagons self dumping, and minimized the labor requirements in transporting the chopped foliage to the silo pit at the headquarters ranch.

The remaining equipment was already in use and consisted of a front-end loader on a wheel tractor plus a small tracklayer tractor used to compact the ensilage in the pit.

Mr. Jackson's top ensilage program dovetails with his alfalfa ensilage making, since he has been in the habit of making ensilage from his first and last cuttings of alfalfa, when the value of these cuttings as hay hardly pays for the cost of cutting and baling.

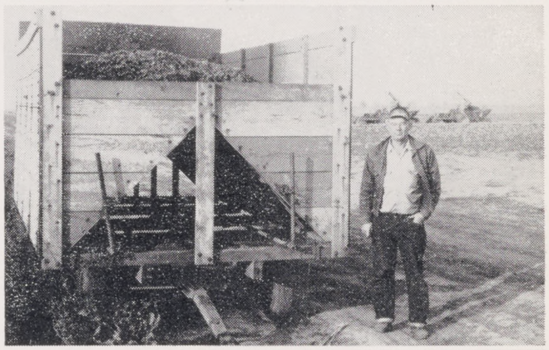
Of particular note is the careful manner in which the silo pit is constructed and used. First of all the floor of the pit has a hump such that drainage runs by gravity to each end of the trench. The sides of the

(Continued on Page 48)



HARVESTING THE FOLIAGE is done with a Lundell Forage Cutter, with the stationary cutter-bar removed. This produces large, unbruised leaf-pieces which make better ensilage than mushy, crushed foliage.

BEETS READY FOR HARVEST have most of the leaf blades removed, but retain the petioles. High beets (center foreground) are scalped; Marbeet harvester picks them up without breaking them.



SELF-UNLOADING WAGONS were built to hold about 2 tons of chopped leaves, and to discharge from both sides when the doors are tripped. Marbeet harvesters (background) complete the root harvest.

FILLING THE SILO TRENCH is done with a conventional front end loader on a light tractor. Foliage is heaped to a depth of about 4 feet. Sodium Metabisulphite is added as a preservative (about 8 lbs. per ton).

COMPACTING THE ENSILAGE is done with a crawler tractor. Following this operation, a polyethylene sheet is stretched over the surface and weighted with scrap pipe and stones. This excludes air and aids curing by retaining the sulphur dioxide gas evolved from the Sodium Metabisulphite.

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SUCCESS MARKS 4-H PROJECTS

By S. L. STOVALL

Livestock Specialist, Spreckels Sugar Company

IN THE LAST issue of the Bulletin, we described the organization of the new 4-H sugar beet program initiated this year. Evidence of the success of the program is mounting. Not only was there a record number of 4-H sugar beet projects undertaken, but there developed a fine spirit of cooperation between the boys and their project leaders.

In the Manteca district (San Joaquin County) the 1957 program came to a happy end when some thirty 4-H clubbers assembled at the Manteca factory to view the final product resulting from this year's sugar beet projects. They were the luncheon guests of the Spreckels Sugar Company, and each youngster, in addition to touring the sugar factory, received the sugar which was produced from his own beet plot.

These projects were conducted in six San Joaquin County 4-H Clubs. The clubs involved and their leaders were: in the Stockton district, the Waterloo and Waverly Club led by Dan Brandstad; in the Lodi district, the Tokay Club led by John Plotz, and the Harmony Grove Club, led by Arthur Vallerga; and in the Tracy district, the Banta Club whose leader is Dick Venendaal and the Jefferson Club, which was led by Bob Hanson.

The top beet grower in the county was Richard Brandstad, from the Waterloo 4-H Club, who led all others both in tons of beets and pounds of sugar per acre. Richard's beets corresponded to a 45.2 ton per acre crop, or 10,747 pounds of sugar per acre.

Other top producers of sugar were Roger Mettler, 9,069 pounds per acre, and Mike Natali, 9,001 pounds per acre. The second and third highest beet yields were grown by Mike McDonald, 39.1 tons per acre, and Arthur Vallerga, 38.9 tons per acre.

Spreckels field men, who acted as project leaders for the project, were Tom Ryan for the Banta and Jefferson Clubs, and Stewart Anderson for the Tokay and Greenwood Clubs. They, along with Farm Advisor Harry Miller and Field Crops Advisor Ron Baskett of the San Joaquin County Extension Serv-

(Continued on Page 48)

S. L. Stovall Photo

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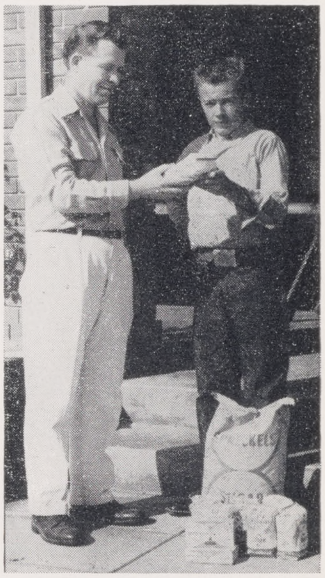
TOP SUGAR PRODUCERS in this year's San Joaquin County 4-H Club Sugar Beet Project are (bottom row, left to right): Richard Brandstad, Mike Natali, Arthur Vallerga, Mike McDonald. In the back row: Mrs. Brandstad, leader in the Waterloo Club; Stewart Anderson, Spreckels Sugar Company Field Superintendent and Project Leader; and Mrs. Arthur Vallerga, leader in the Harmony Grove Club.

HARRY MILLER, 4-H Club Farm Advisor in San Joaquin County, presented Richard Brandstad with the sugar produced from his 4-H Club sugar beet plot. Richard Brandstad was the top sugar producer this year.



S. L. Stovall Photo

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Manteca Bullettin Photo

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THIRTY 4-H CLUB MEMBERS and their project leaders met at the Manteca factory on November 9. They were the luncheon guests of Spreckels Sugar Company and each youngster, in addition to a guided tour of the factory, received an amount of sugar equal to that produced in his own plot.

THE 1957 KERN COUNTY BEET CROP

By JOHN KENDRICK
Assistant Agricultural Manager,
Spreckels Sugar Company

THE 1957 KERN COUNTY sugar beet crop has shown an alarming reduction in yield and sucrose content in comparison with the normally high values in this area. For several months prior to harvest time a yield well below normal was predicted. It was not until the start of harvest, however, that the full seriousness of the situation became evident. Both yield and sugar per cent were far below expected values and the extremely low purity has made processing the crop a difficult problem in the factories.

In comparing the 1955 and 1956 crops with the present crop, the reduction is noted in all receiving station areas of the county. The loss in yield appears to be on the order of about ten tons per acre, and the sugar reduction ranges from 1 to 2.5 percentage points. It is also interesting to note that a slight but reasonably uniform reduction in yield was evident in 1956. The fact that virus yellows was common in the area in 1956 may therefore be more significant, in the light of recent developments, than believed at the time of observation.

WHAT HAPPENED?

The exact cause of the depressed yield and sucrose content this year has not yet been fully determined, but the evidence available strongly indicates that disease is the cause.

Almost without exception, fields showed widespread signs of four diseases—virus yellows, curly top, mosaic, and Rhizoctonia rot. It was observed early in the growing season that beets over the entire area turned yellow, apparently from the effect of virus yellows. Mosaic was also noted early, particularly in the vicinity of beet crops carried through the winter. Curly top symptoms became apparent in August in a very high percentage of the plants. Curly top appeared to be more concentrated in the southern portion of the county than in the north. During harvest an abnormally high incidence of root rot was noted, and it is conjectured that this was the source of rapid and extensive deterioration of the crop en route for processing.

Evidence that this year's problems are no respectors of variety, grower, area or processor is clearly provided by the experiences of every processor in Kern County. Likewise it is probable that every single grower in the county experienced a depression in yield or sugar or both.

A brief description of the diseases most commonly found in the Kern County fields may provide some background as a basis for proposed remedial measures:

Virus Yellows: This disease has been identified in the United States only as recently as 1952, although it has been a recognized disease of European sugar beet culture for a much longer period. This virus is transmitted by the green peach aphid, although other aphids may be a minor factor in its transmission. The rather recent appearance of the virus and its characteristic of blanketing an area makes measuring its effect upon yield most difficult. It is estimated by those who have studied the disease that up to a 50 per cent yield reduction can be expected, depending upon the time of infection and the virulence of the infecting strain.

The green peach aphid, the insect vector, can transmit the disease for an approximate maximum period of about seventy-two hours after acquiring the virus from a diseased plant. Once a plant acquired the disease, however, it retains it almost for the duration of its life.

In the Kern County area the aphid populations are believed to exist in cycles, with peak populations occurring in the spring, before the onset of hot weather (at which time the population declines to almost nothing) and again in the fall, between the high summer temperatures and the cold weather of winter. More study of the aphis population of Kern County is needed in order to predict movement and population trends.

Sugar Beet Mosaic: Mosaic is another virus disease and like Yellows is also transmitted by the green peach aphid. The symptoms of the disease consist of a leaf mottling which appears to be due to concentrations of chloroplasts, heavier in some areas than in others. The disease is transmitted almost instantaneously to the beet by the probing mouthparts of the aphid carrier. The amount of damage due to this virus is not known, and this disease alone is not considered too serious. It is suspected, however, that in combination with other diseases its effects may become of significant proportions.

Curly Top: This is another virus disease and one well known in the beet sugar industry. The vector in the case of Curly Top is the leaf hopper, Circulifer tenellus. Curly Top has been successfully controlled in two ways; (1), by the development and use of varieties of beets which are resistant to the disease and, (2), by the control of insect population in its overwintering areas. These controls have proved so successful that the disease is not normally a factor in reducing yields where the crop is otherwise healthy and well tended.

Rhizoctonia Root Rot: Rhizoctonia is a common fungus found in most agricultural soils of the United States. In beets it is most commonly associated with seedling disease called "damping off." Because of its omnipresence, it is always on hand to infect the crop as a secondary invader, at any stage of growth, whenever the general vigor of the plant is low. It is the infection of this pathogen which appears responsible for the rapid deterioration of the root during transit to the factory and the corresponding reduction in purities.

Observations through the season in Kern County strongly indicate that the early appearance of virus yellows was followed by the later appearance of the other diseases. It has been demonstrated in the greenhouse that beets infected with yellows are more susceptible to curly top virus than non-yellows-infected controls. The assumption that the mosaic and the Rhizoctonia, coming after the yellows infection, likewise complement each other in ravaging the plant, appears plausible.

WHAT IS BEING DONE?

Near the end of October a meeting in the Kern County Farm Advisor's office of all parties interested in the sugar beet problem provided the preliminary groundwork for a counter-measures program. The counter-measures proposed will be conducted on a cooperative basis involving the processors, the growers, the University and its Extension Service, the U. S. Department of Agriculture and some of the commercial enterprises in the area.

Briefly, the program will take the following form:

1. *Beet Free Period.* A period, entirely free of a beet crop or crop residue, will be established between the tentative dates of December 15, 1957 and January 15, 1958. In addition to having the area free of beets, an attempt will be made to control any other known hosts of the yellows virus. The purpose of this period is, of course, to reduce the sources of virus innoculum to as near zero as possible for at least 30 days.

2. *Aphid Control.* (Maximum) An attempt will be made through use of insecticides to maintain selected plots and strips free of aphis. Insecticide treatments will be made at frequent intervals upon emergence of the crop and continuing until such time as the aphis population and movement is reduced to insignificant levels by warm weather. The purpose of this phase of the program is to (a), determine the effects of the insecticide treatments on the overall insect population, (b), compare the development of the disease in the treated and untreated areas and, (c) measure the effects of the disease upon infected and uninfected areas.

3. *Aphid Control.* (Minimum) This phase will consist of attempting to control the aphis population based upon observation of population build-up and movement to determine if adequate control can be maintained with a much more modest expenditure than in the maximum effort.

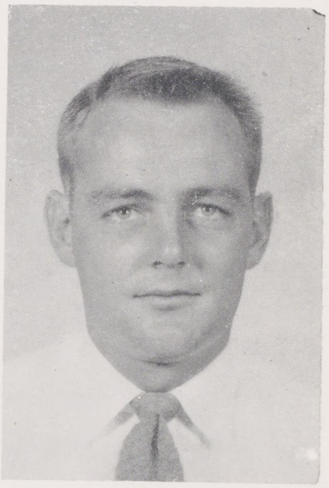
An allied phase of the program, although not affording immediate remedial measures, will be the study of aphis movements, population, and other ecological considerations. This basis research will provide invaluable information on the insect behavior in the Kern area and may furnish clues to expedient, economical control measures.

NEW DISTRICT ENGINEERS AT SPRECKELS AND SACRAMENTO

John Nielsen 85

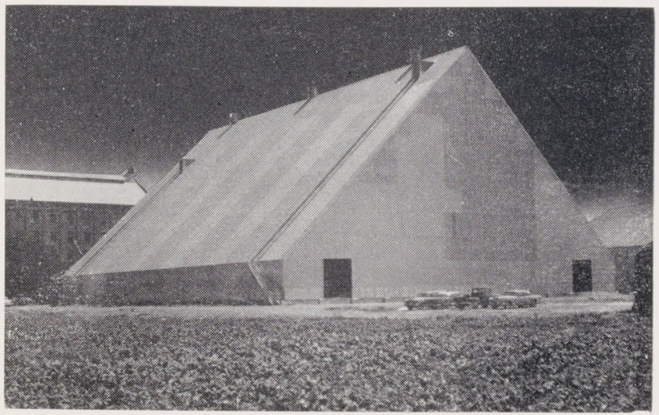
JOHN NIELSEN, who had been Assistant District Engineer at Sacramento Agricultural Equipment Yard since 1947, in April of this year assumed the duties of District Engineer. John is a graduate of the University of California, having majored in Agricultural Engineering. Prior to his coming to Spreckels, he had experience in the construction industry as well as in the field of agricultural implements.

TOM RYAN, who has been a Field Superintendent in several of our districts and most recently at Manteca, has become the District Engineer at Spreckels. Tom is also a graduate from the University of California with a major in Agricultural Engineering. Tom has taken over the work of Walter Gerow, who will be retiring in a few months after 25 years of service.



Tom Ryan 86

While the principal work of the District Engineers is to supervise the maintenance of the Company's thirty odd Receiving Stations, they also work closely with our Agricultural Engineer, Austin Armer, in designing and constructing new and better types of receiving facilities to serve our growers. They also have the maintenance of all the Company's agricultural equipment and supervise the irrigation facilities on company-owned properties. In addition to these duties, they work closely with our field organization in developing and adapting equipment for planting, mechanical thinning, and harvesting sugar beets.



84

10,000 TONS of bulk molasses dried beet pulp will be stored in this new warehouse at Factory 1, Spreckels. It was recently completed to meet the demand for storing increased pulp output.

EARLY HARVEST

(Continued from Page 42)

that portion of the field remaining to harvest, and the balance of the field was abandoned.

It certainly goes without saying that this grower would have recovered a much greater portion of his costs had he continued his harvest operations during early September.

After observing these two examples as well as countless others in the field, it can safely be said that there are certainly instances when the grower knows that he will be faced with a dirty, trashy, expensive harvest because of weeds. When such is the case, an early harvest would certainly leave more net profit for the grower, and that is the main incentive for growing beets in the first place.

BEET TOP ENSILAGE

(Continued from Page 44)

trench are made by dozing up levees to a height of about four feet.

Complete preservation of the ensilage is assured by two important steps—first the addition of eight pounds of sodium metabisulphite to each ton of ensilage, and second, by covering the silo with a polyethylene sheet.

All in all this is an outstanding example of making ensilage from sugar beet tops, as well as fitting beet top ensilage into a feeding program which already involves ensilage made from first and last cuttings of alfalfa.

4-H PROJECTS

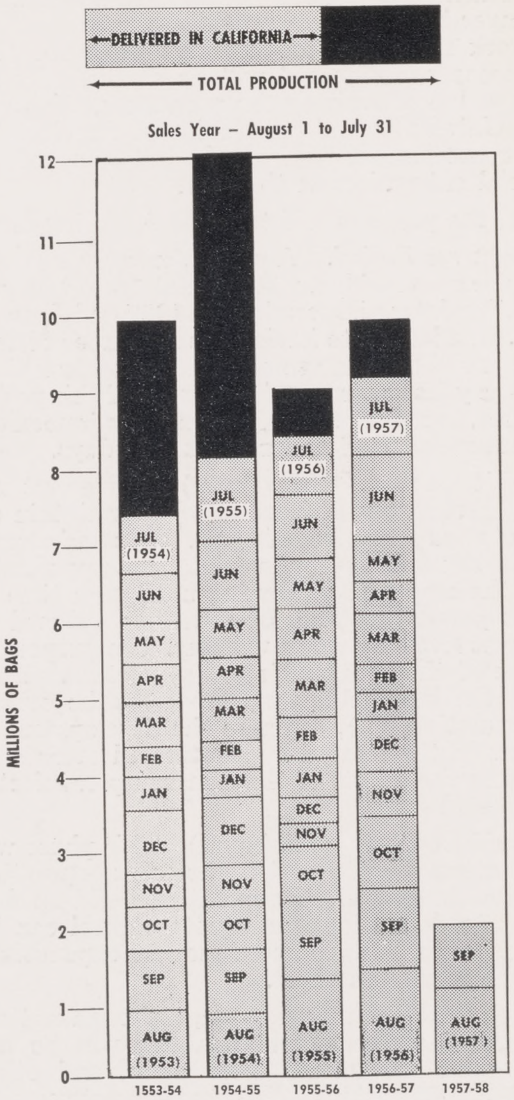
(Continued from Page 45)

ice office, worked together to organize the project and took the 4-H members and their leaders on several field trips during the year.

Each 4-H member planted a small plot of beets at his home. On the average this amounted to about five 20-foot rows. As the season progressed the members visited several beet farms to learn how farmers grew beets. At the end of the growing season each plot was harvested and samples were taken to determine the yield of beets and sugar. These beets were delivered to the Spreckels' Manteca Factory and the sugar from the beets returned to the 4-H'er.

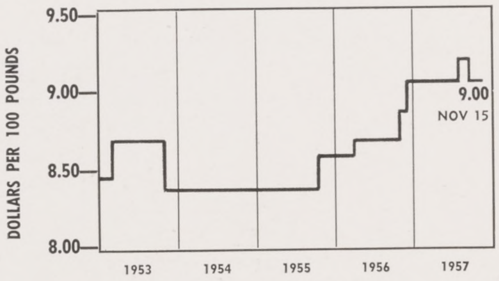
At the meeting in Manteca, Harry Miller announced that a second-year project is planned for the coming year. This will enable the 4-H Club member to learn about sugar beet growing in more detail. The plot program will be expanded to somewhat larger plots and will include a fertilizer trial to demonstrate how sugar beets respond to fertilization.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, Editor
SPRECKELS SUGAR COMPANY
WOODLAND, CALIFORNIA

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